



Positive Emotions and Coping: Examining Dual-Process Models of Resilience

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Abstract

This chapter reviews dual-process models of resilience. One model of resilience considers the importance of investigating the intersections between positive and negative emotions (e.g., Folkman, 1997, 2001; Folkman & Moskowitz, 2000). Indeed, maintaining and enhancing positive emotions yields important advantages when coping with stress. Another dual-process model of resilience focuses on the interplay between automatic and controlled processes. Most prior research on resilience has centered mainly on *deliberate, response-focused* processes, which may be costly to an individual due to the conscious effort involved in cultivating positive emotions in times of stress. This literature, however, has excluded another important aspect of resilience: the *automatic* activation of positive emotions. The automatic activation of positive emotions is pervasive in everyday life, and may have far-reaching consequences for individuals' abilities to cope with stressors. Automatic processes of resilience might operate with less cost to the individual, as they are executed relatively effortlessly. The theoretical underpinnings of these models will be examined and recent research will be reviewed, showing that dual-process models of resilience may lay the groundwork for important new directions in research on positive emotions, stress, and coping.

Keywords: positive emotion, coping, resilience, dual-process models

Within the landscape of our emotional lives, we generally experience positive emotions with greater frequency and intensity than negative emotions (Carstensen, Pasupathi, Mayer, & Nesselroade, 2000; Zelinski & Larsen, 2000). Although empirical research has traditionally tipped the scale in favor of studies on negative emotions, in recent years a greater balance has begun to emerge. Given the mosaic of our emotional lives, it seems important to investigate the dynamic interplay among all of our valenced experiences. The literature on psychological resilience provides a useful lens through which to examine the associations between positive

and negative emotions, especially with respect to coping behavior.

Resilience is defined as the psychological quality of resetting oneself after significant setbacks, and of returning from adversity relatively unscathed, and perhaps even stronger. A “deceptively simple construct” (Kaplan, 2007, p. 39), resilience is a dynamic and multidimensional concept that can inform research across multiple levels of analysis. With the goal of gaining a deeper understanding about the construct of resilience, scholars often raise several questions: What are the roots of resilience? How does one develop important protective factors to



1 help recover from adversity? What are the pathways
2 to adaptation and wellness? Recently, researchers
3 have identified that one important factor that con-
4 tributes to successful coping and resilience is the
5 capacity to experience positive emotions in the
6 midst of stressful circumstances.

7 The aim of the present chapter is to examine *how*
8 and *why* positive emotions are useful in the coping
9 process. Towards this aim, this chapter reviews
10 dual-process models associated with resilience. One
11 such model considers the importance of investigat-
12 ing the intersections between positive and negative
13 emotions (e.g., Folkman, 1997, 2001; Folkman &
14 Moskowitz, 2000). Indeed, maintaining and enhanc-
15 ing positive emotions yield important advantages
16 when coping with stress. There are also individual
17 differences in this capacity, with high-trait-resilient
18 people being especially proficient at using positive
19 emotions to cope (Tugade & Fredrickson, 2002,
20 2004). Another dual-process model identifies two
21 types of regulatory processes: automatic and con-
22 trolled processes. Most prior research on resilience
23 has centered mainly on *deliberate, response-focused*
24 processes, which may at times be costly to an indi-
25 vidual due to the conscious effort involved in culti-
26 vating positive emotions in times of stress. The
27 literature, however, has excluded another important
28 aspect of resilience: the *automatic* activation of
29 positive emotions. The automatic activation of posi-
30 tive emotions is pervasive in everyday life and may
31 have far-reaching consequences for individuals’
32 abilities to cope with stressors. Automatic processes
33 might operate with less cost to the individual, as they
34 are executed relatively effortlessly. The theoretical
35 underpinnings of these models will be examined
36 and recent research will be reviewed, showing that
37 dual-process models of resilience may lay the ground-
38 work for important new directions in research on
39 positive emotions, stress, and coping.

40 **State and Trait Resilience**

41 Resilience is characterized by effective coping and
42 adaptation despite significant loss, hardship, or
43 adversity in one’s life (Block & Kremen, 1996;
44 Cicchetti & Tucker, 1994; Luthar, 2003; Masten,
45 2001). Studies on resilience have burgeoned in the
46 past decade, with growing attention spanning mul-
47 tiple disciplines in psychology (e.g., developmental,
48 psychopathology, social/personality, behavioral
49 genetics, affective neuroscience). Much of the ear-
50 lier work on the construct of resilience began in the
51 field of developmental psychology. Early studies
52 focused on identifying protective factors that help

individuals function well and even thrive in later
adulthood despite exposure to early childhood
hardships such as poverty, maltreatment or abuse,
parental divorce, family mental illness, parental
alcoholism, or exposure to violence (cf., Cicchetti &
Tucker, 1994; Luthar, Cicchetti, & Becker, 2000;
Masten, 2001).

Many scholars consider psychological resilience
to be both a state and a trait construct. When faced
with downturns and disturbances, “low-resilient indi-
viduals” are more easily derailed, seemingly unable
to return to normative levels of functioning in their
daily lives. In contrast, “high-resilient individuals”
have an ability to bounce back and remain steadily
on course when mildly disrupted or faced with
significant adversity. Scholars emphasize that it is a
misconception that high-resilient individuals are
“invulnerable” to stress, or that they have an absence
of negative affect in their lives (cf., Luthar et al.,
2000). Rather, for these individuals, negative affect
is experienced but it does not endure. Moreover,
when they do experience negative affect, there are
fewer long-term negative consequences for them.
Indeed, trait-resilient individuals have a unique
ability to react to stress in an adaptive (vs. maladap-
tive) way, across a wide array of environments, even
though they have experienced adversity. How do
they do it? A number of hypotheses have been
explored. Some researchers theorize that, starting
at a young age, high-resilient individuals take an
active role in seeking and receiving the experiences
that are developmentally appropriate for them
(Cicchetti & Tucker, 1994). Others theorize that
high-resilient individuals have a heightened ability
to use the information provided by negative emo-
tions, and learn from the experience to help guide
their future behavior (Davidson, 2000). Still others
posit that the ability to harness positive emotions in
the midst of negative experiences explains patterns
of resilient coping (Tugade & Fredrickson, 2004).
To investigate which factors predict the ability to
fare well under stress, researchers have examined
cognitive, emotional, and physiological response
patterns of low- and high-resilient individuals.

53 **Neural correlates of resilience**

54 One feature of psychological resilience is the capac-
55 ity to respond flexibly and appropriately with respect
56 to changing situational demands. Three regions of
57 interest in the brain were recently examined with
58 the aim of discovering the neural mechanisms of
59 resilience. The *amygdala* is activated in response to
60 emotionally salient stimuli; the *insula* is activated in
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1 anticipation of impending anxiety; and the *orbito-*
 2 *frontal prefrontal cortex* (OFC) is activated when
 3 one expects threat, and is deactivated when the
 4 threat doesn't actually occur or is no longer present.
 5 Together, these neural regions are important for
 6 understanding emotional flexibility, which is a char-
 7 acteristic often associated with individual differ-
 8 ences in trait resilience (Waugh, Fredrickson, &
 9 Taylor, 2008).

10 To investigate the neural correlates of resilience,
 11 low- and high-resilient individuals were identified
 12 based on self-reports on the ego-resiliency scale
 13 (Block & Kremen, 1996). This scale measures the
 14 extent to which people can modify their responses
 15 to meet the demands of changing circumstances,
 16 and has been used in a host of studies that investi-
 17 gate individual differences in trait resilience
 18 (Fredrickson et al., 2004, 2008; Waugh et al., 2007,
 19 2008). This measure has also been shown to have
 20 ecological validity, as evidenced in a study that used
 21 this measure to investigate positive emotions and
 22 resilience in the midst of a national disaster, such
 23 as the September 11 terrorist attacks on the United
 24 States (Fredrickson et al., 2003). To investigate the
 25 neural correlates of resilience, participants passively
 26 viewed a series of aversive or neutral pictures that
 27 were each preceded by threat (aversive) or no-threat
 28 (neutral) cues. When under threat, low-resilient
 29 individuals exhibited prolonged activation in the
 30 anterior insula and amygdala in response to both
 31 the aversive and neutral pictures. In contrast, high-
 32 resilient individuals exhibited insula and amygdala
 33 activation only in response to the aversive pictures.
 34 The orbito-prefrontal cortex (OFC) was also shown
 35 to be an important region to investigate with respect
 36 to anticipatory coping and release of anticipation
 37 after a threat is no longer relevant. Both low- and
 38 high-resilient people showed heightened activation
 39 in the posterior OFC in response to threat versus
 40 non-threat cues (reflecting expectation of threat).
 41 Only high-resilient people, however, showed activa-
 42 tion in the anterior OFC (reflecting expectation
 43 of safety when the threat was removed) (Waugh
 44 et al., 2008).

45 Together, these findings provide neural evidence
 46 that in threatening situations, high-resilient people
 47 exhibit greater emotional flexibility to meet chang-
 48 ing situational demands. Specifically, high-resilient
 49 individuals (vs. low-resilient individuals) engage
 50 in appropriate emotional and physiological cop-
 51 ing responses when threat is present, and likewise
 52 engage in non-emotional responses when threat is
 53 not present (Waugh et al., 2008). These results are

in line with previous research showing that high- 54
 (vs. low-) resilient individuals appraise upcoming 55
 stressors as a challenge to be met and overcome 56
 rather than a debilitating threat, and consequently 57
 they recover more quickly once the threat has passed 58
 (Tugade & Fredrickson, 2004). In all, these findings 59
 add support to theoretical views that resilient indi- 60
 viduals display greater emotional flexibility, recruit- 61
 ing important and appropriate behavioral responses 62
 to match the demands of the situation, which 63
 can change frequently and unpredictably. Future 64
 research in the neuroscience of resilience may ben- 65
 efit from investigating the role of positive emotions 66
 in facilitating emotional flexibility in the midst 67
 of changing situational demands. These future lines 68
 of work may help to discover the neural bases of 69
 the affective capacities that enable resilience. 70

Autonomic correlates of resilience 71

Theoretically, resilience is defined as the ability to 72
 “bounce back” from stressful experiences quickly 73
 and effectively. Until recently, however, few studies 74
 provided empirical support for this definition. 75
 Researchers have investigated the autonomic corre- 76
 lates of psychological resilience by examining patterns 77
 of cardiovascular recovery from negative emotional 78
 arousal (Tugade & Fredrickson, 2004). If high- 79
 resilient individuals are theorized to rebound effi- 80
 ciently in the face of stressful experiences, then it 81
 was hypothesized that this ability to recover from 82
 stress should be reflected physiologically as well. 83
 To test this hypothesis, researchers identified low- 84
 and high-resilient individuals based on self-reported 85
 responses to the ego-resiliency scale (Block & 86
 Kremen, 1996). Researchers then experimentally 87
 induced experiences of anxiety by asking low- and 88
 high-resilient participants to prepare a speech to be 89
 delivered in front of a videocamera for evaluation 90
 (in fact, no participants actually delivered their pre- 91
 pared speeches). As expected, the speech prepara- 92
 tion instructions induced cardiovascular arousal as 93
 well as subjective reports of anxiety as intended, 94
 with no differences between low- and high-resilient 95
 individuals. Differences in trait resilience, however, 96
 emerged in two important ways. First, high-resilient 97
 (vs. low-resilient) individuals were more likely to 98
 report experiencing positive emotions, such as inter- 99
 est, alongside their self-reported anxiety. Second, 100
 high-resilient participants evidenced faster cardio- 101
 vascular recovery from the arousal generated by the 102
 anxiety-inducing task, reflecting the ability to phys- 103
 iologically “bounce back” from stress. Mediation 104
 analyses revealed that the experience of positive 105

emotions contributed, in part, to high-resilient participants' abilities to achieve efficient emotion regulation, demonstrated by accelerated cardiovascular recovery from negative emotional arousal. These findings indicate that high-resilient individuals are characterized by using positive emotions to cope with stress (Tugade & Fredrickson, 2004; Tugade et al., 2004).

Positive Emotions: Form and Function

Why are positive emotions, such as love, interest, joy, or gratitude, useful in the coping process? The broaden-and-build theory details the adaptive function of positive emotions (Fredrickson, 1998, 2001). This theory posits that positive emotions hold evolutionary significance beyond simply the hedonic experience of pleasantness. Indeed, positive emotions signal safety to an individual, cueing one that it is safe to roam and explore one's environment or sit quietly still without vigilance. Fredrickson's theory states that positive emotions function to broaden people's momentary thoughts and actions. For instance, experiences of gratitude function to increase the awareness of the social connection people have with their benefactors. When feeling grateful, people think about the many ways their benefactors are important in their life, and they consider creative and meaningful ways to express their appreciation (cf., Fredrickson, 2004). The outgrowth of positive emotions, like gratitude, is more expansive thinking and a greater breadth of action that helps one to build personal resources (e.g., cognitive, social, intellectual, and coping resources).

The broadening function of positive emotions may be useful for developing a repertoire of coping strategies to be kept in store until needed to cope with stress. Research shows, for example, that positive emotions produce more expansive options for behavioral action. After being experimentally induced to experience positive emotions (contentment, amusement), negative emotions (fear, anxiety), or neutrality, participants were asked to consider different activities they would like to pursue at that very moment. Findings indicated that those induced to experience positive emotions listed significantly more activities, compared to those induced to experience neutral or negative emotions (Fredrickson & Branigan, 2005). Considering a broader array of possible actions can have important benefits for coping. One advantage is that it might increase emotion knowledge, allowing one to consider different behaviors and actions important for responding to a stressful situation with the aim of determining the most efficient or appropriate

action when the situation calls for coping (Tugade et al., 2004). To the extent that positive emotions broaden coping resources, they are also useful in strengthening people's social resources by developing and maintaining social relationships. Indeed, interventions to increase positive emotional experiences (e.g., cognitive-behavioral interventions, mindfulness meditation) are associated with health-enhancing outcomes in part because these interventions strengthen and enhance social connections (Chesney et al., 2005).

Another function of positive emotions is the "undoing" function, which is especially relevant to coping. The undoing effect illustrates the complementary effects of positive and negative emotions on the cardiovascular system. Negative emotions such as fear, anger, or anxiety have an alarm function; they produce sympathetic arousal that physiologically prepares the body to fight or flee. In contrast, positive emotions, such as contentment, joy, or interest, have a quieting function; they reduce the sympathetic arousal generated by negative emotions, helping to bring physiological reactivity back to levels prior to the onset of the stressor. To empirically test the undoing effect, continuous measures of cardiovascular responding were collected from participants who were induced to experience a high-arousal negative emotion (e.g., anxiety), after which participants were randomly assigned to experience either positive emotion, negative emotion, or neutrality. Findings revealed that participants induced to experience positive emotion (e.g., contentment, mild joy) had faster cardiovascular recovery from negative emotional arousal compared to participants induced to experience negative emotion or neutrality (Fredrickson et al., 2004; see also Fredrickson & Levenson, 2001). In the realm of coping, then, it appears that positive emotions function to help down-regulate negative emotional experiences, giving individuals the opportunity to pursue a wider array of thoughts or actions. These findings also lend support to theories indicating that positive emotions give individuals short "breathers" from stressful experiences (Lazarus & Folkman, 1984), giving them the momentary pause necessary to restore and replenish lost resources after experiencing stress.

Positive Emotions and Physical Health Outcomes

Within the past decade, accumulating research evidence points to the physical health benefits of positive emotions. Experiences of positive emotion

1 have been shown to speed recovery from coronary
2 artery bypass surgery (Scheier, Matthews, Owens,
3 Schulz, Bridges, Magovern, & Carver, 1999) and
4 reduce the risk of disability, stroke, and cardiovascu-
5 lar mortality in older adults (Danner, Snowdon &
6 Friesen, 2001; Ostir et al., 2000; Richman et al.,
7 2005).

8 Recent research has investigated the role of posi-
9 tive emotion in predicting resilient outcomes for
10 individuals from disadvantaged social groups. Ostir
11 and his colleagues (2006) investigated the relation
12 between positive emotions and blood pressure levels
13 among Mexican Americans, a minority group that
14 is faced with disadvantages in health care access,
15 lower income, and greater risk for obesity and dia-
16 betes, compared to non-Hispanic White Americans
17 in the United States. Greater experiences of positive
18 emotion were associated with lower blood pressure
19 despite experiencing stressors associated with minor-
20 ity status. Specifically, for participants who were
21 not taking antihypertensive medication, greater
22 reports of positive emotions were associated with
23 lower levels of systolic and diastolic blood pressure.
24 For participants taking antihypertensive medica-
25 tion, higher levels of positive emotion were associ-
26 ated with lower systolic blood pressure (Ostir,
27 Berges, Markides, & Ottenbacher, 2006). In related
28 research on the importance of positive emotion on
29 cardiovascular health outcomes, Ostir and his col-
30 leagues found that increases in reports of positive emo-
31 tion were associated with a lower incidence of stroke
32 among older White and Black Americans (Ostir,
33 Markides, Peek, & Goodwin, 2001) and higher motor,
34 cognitive, and overall functional status 3 months fol-
35 lowing a stroke, even after adjusting for relevant
36 health risk factors (Ostir, Berges, Ottenbacher, Clow,
37 & Ottenbacher, 2008). Together, these findings sug-
38 gest that assessments of positive emotions during and
39 following the onset of acute health events may aid
40 our understanding of disease prevention, progression,
41 and recovery.

42 Experiences of positive emotions also predict
43 lower susceptibility to the common cold. Research-
44 ers asked participants to rate their positive emo-
45 tions (lively, happy, cheerful) and negative emotions
46 (depressed, nervous, angry) over a 2-week period.
47 After the 2 weeks, participants were given nose
48 drops of rhinovirus, which resulted in the flu for
49 over 33% of the participants. Notably, those who
50 reported greater positive emotions prior to exposure
51 to the virus were less likely to develop the flu. In
52 contrast, there was no significant relation between

negative emotions and flu symptoms (Cohen, 53
Doyle, Turner, Alper, & Skoner, 2003). 54

55 Positive emotions experienced over time may be
56 most useful for predicting long-term benefits on
57 health. Previous research reported no association
58 between baseline positive affect and morbidity or
59 mortality among HIV-positive individuals. Measuring
60 positive affect only at one time point (baseline) may
61 not tell the whole story, however. When positive
62 affect is assessed across several time points prior
63 to death, findings reveal the importance of chronic
64 positive emotions on health. In one study, HIV-
65 positive gay men completed measures of the Center
66 for Epidemiologic Studies Depression Scale (CES-D;
67 Radloff, 1977), which comprises four subscales:
68 positive affect, negative affect, somatic, and inter-
69 personal relations. The positive affect subscale mea-
70 sures the frequency of feeling happiness, hope, and
71 joy. None of the CES-D subscales predicted AIDS-
72 related mortality, except for the positive affect scale.
73 HIV-positive gay men who reported greater cumu-
74 lative positive affect prior to death had lower
75 AIDS-related mortality compared to those who
76 reported lower positive affect throughout the study,
77 even when controlling for other markers of disease
78 progression (Moskowitz, 2003). These findings
79 advance research on positive affect and health for
80 two important reasons. First, the results demon-
81 strate that positive affect is uniquely associated
82 with mortality due to AIDS. Second, they suggest
83 that survival rates may depend on chronic (vs. epi-
84 sodic) positive affect when considering AIDS-related
85 mortality.

Positive Emotions, Coping, and Health in Everyday Life

86 When are positive emotions most likely to confer
87 their benefits on coping? The daily diary meth-
88 odology is a useful technique for tracking the fluc-
89 tuations of both positive and negative emotional
90 experiences over time. One theoretical model,
91 called the Dynamic Model of Affect (DMA; Zautra,
92 Affleck, Tennen, Reich, & Davis, 2005), employs
93 diary techniques and proposes that daily experi-
94 ences of positive emotion are important for the
95 regulation of negative emotions (Zautra, Johnson,
96 & Davis, 2005; Zautra et al., 2005). 98

99 Empirical support for the DMA has been shown
100 in research demonstrating the role of daily positive
101 emotional experiences among elderly individuals
102 coping with the challenges and stresses of late adult-
103 hood (Ong, Bergeman, Bisconti, & Wallace, 2006).

Examining patterns of emotional reactivity and recovery in the daily lives of elderly widows, Ong and his colleagues posit that positive emotions are useful in the coping process for two reasons. First, positive emotions may interrupt the ongoing stress response. Second, positive emotions may accelerate one's ability to adapt to subsequent stressors (Ong et al., 2006). In line with previous research (Tugade & Fredrickson, 2004; Tugade et al., 2004), trait resilience accounted for meaningful differences in the coping process. High-resilient widows in their sample were more likely to experience both positive and negative emotions throughout their bereavement process. Importantly, the researchers reported that daily experiences of positive emotion moderated stress reactivity and mediated stress recovery. These results indicate that those with greater daily positive emotions had lower overall stress reactivity, compared to those with lower daily positive emotions. In addition, daily positive emotions aided stress recovery for the high-resilient widows (Ong et al., 2006). Over time, then, the experience of positive emotions functions to assist high-resilient individuals in their ability to recover effectively from daily stress. These findings are in line with other research showing that daily positive emotions accelerate recovery from stress (Moskowitz, Folkman, & Acree, 2003), which may be especially useful for individuals in late adulthood (Carstensen & Mikels, 2005). Older adults are at greater risk of cardiovascular illness, and thus examining their emotional responses to changes in health status is particularly important. Indeed, reports of higher positive emotion are associated with lower blood pressure in older adults (Ostir et al., 2006), as well as lower levels of symptom distress, fewer depressive symptoms, higher daily activity scores, and higher perceived physical and mental health-related quality of life (Hu & Gruber, 2008). Emerging evidence also reveals that tracking the emotional well-being of older adults can be predictive of their recovery following cardiovascular illness, such as heart attack or stroke (Ostir et al., 2008).

Additional support for the DMA has been found in a host of daily diary studies, showing that experiences of positive emotions are useful for coping, especially on days when one experiences elevated levels of stress (Ong, Bergeman, & Bisconti, 2004; Zautra et al., 2005). Using the DMA as a theoretical model, researchers found that resilient bereaved individuals show weaker positive-to-negative affect correlations (demonstrating greater emotional

complexity) compared to less-resilient bereaved individuals. This greater emotional complexity predicted better adjustment after bereavement. Importantly, this effect remained even after controlling for self-reported distress (Coifman, Bonanno, & Rafaeli, 2007). Thus, the DMA is a useful theoretical model for demonstrating the beneficial function of emotional complexity (positive emotions generated in the midst of negative affect) for resilient individuals in the aftermath of aversive life events.

Resilience in the Face of Adversity

The idea that positive emotions can arise in the face of adversity and produce healthy outcomes for individuals is sometimes met with skepticism. Some suggest that this pattern of responding is maladaptive, reflecting defensive denial that will result in the delayed onset of grief (e.g., Bowlby, 1980).

Other researchers argue that no empirical evidence to date supports the idea that experiencing positive emotion in the midst of adversity will result in the delayed onset of grief (Bonanno, 2004; Wortman & Silver, 1989). Challenging the long-standing view that the ability to function well despite loss reflects repression, denial, or pathology, Bonanno and his colleagues have conducted a host of longitudinal studies to show that having the capacity to generate positive emotions in the face of adversity reflects resilience (Bonanno, 2004). Resilient trajectories are those that maintain a steady and stable equilibrium over time. Specifically, resilience is operationalized as a trajectory of response over time that reflects healthy physical and psychological functioning despite highly disruptive events in one's life, including the death of a loved one, illness, violence, national disaster, or caregiving for a loved one with chronic illness (e.g., Bonanno, 2008; Bonanno et al., 2002; Bonanno, Papa, & O'Neill, 2001).

There is growing evidence for the salutary nature of positive emotions in the bereavement process. Experiences of positive emotions are transformative and have long-lasting consequences for individuals, even if the positive emotions themselves are rather mild and short-lived. For example, behavioral markers of positive emotional experience, such as smiling and laughing while discussing a recent loss of a loved one, have been shown to be associated with better adjustment over time and stronger social relationships (Bonanno & Keltner, 1997; Keltner & Bonanno, 1997). These behaviors are generally subtle and spontaneous, and they are rather common responses to grief. Researchers state that resilience is

not a rare or extraordinary response in the face of stress. All people, not just a subset of individuals, have the capacity to experience positive emotions, even in the face of extreme life circumstances (Bonanno, 2008; cf., Masten, 2001). Together, these studies show that the ability to experience even mild forms of positive emotions in the midst of adversity contributes to resilient trajectories.

The Resilience Response

Thus far, I have reviewed research and theory that examine how, when, and why positive emotions fuel resilience in the face of adversity. To date, the existing research has not differentiated between automatic and controlled processes of resilience. In the sections that follow, I propose a new model of resilience that explores the dual-process nature of generating positive emotions in the service of coping.

Dual-process theories are prevalent in social and personality psychology (Barrett, Tugade, & Engle, 2004; Chaiken & Trope, 1999). The central tenet in these theories is that thoughts, feelings, and behaviors are driven by two separate though complementary processes: automatic and controlled. Automatic and controlled processes are characterized by four important qualities (Bargh, 1994): *awareness* (whether you are consciously aware that a process is happening), *efficiency* (the extent to which you expend cognitive or attentional resources), *intention* (whether you see yourself as having agency in your thoughts, feelings, or behavior), and *control* (whether you are able to modify the behavior in any way). Dual-process theories can be applied to resilience by examining how positive affect is generated via automatic or controlled processes in the service of managing stress.

Controlled processes of resilience

Research shows that positive emotions can be either increased or decreased via controlled processes of emotion regulation (Tugade & Fredrickson, 2007). For example, people may actively seek a means to momentarily lift their spirits or to maintain good feelings and pleasantness. Research on using humor to cope sheds light on the role of cultivating positive emotion to manage a stressful experience. People often intentionally maximize experiences of amusement for a number of reasons. An individual may make efforts to think about a humorous aspect of a stressful experience (deliberate “up-regulation”) to cope with the situation. Subjective experience, behavior (smiling, laughing), and autonomic physiology

(including heart rate, respiration, and sympathetic nervous system activation) are enhanced in accordance with cognitive “up-regulation” processes (Giuliani, McRae, & Gross, 2008). There are also neural activation patterns unique to the conscious up-regulation of positive emotion (Kim & Hamann, 2007).

Other controlled processes of positive emotion generation involve actively increasing and enhancing one’s positive emotional experiences. These are considered “top-down” strategies that require cognitive control and effortful processing because they involve explicit goals that are consciously initiated. Benefits accrue from actively cultivating positive emotions in everyday life (see Fredrickson, 2000, for a review) as well as in response to negative circumstances. One study examined the extent to which people used different strategies to elicit positive emotions in the face of different stressors, including daily hassles such as boredom, social stress, personal failure, or physical discomfort. Findings revealed that actively cultivating positive emotions increased with the severity of stressors. More specifically, the use of coping strategies that elicited positive sensory experiences (e.g., seeking pleasant scents, sounds, or sights) increased with the severity of a stressor over the course of a week. Interestingly, even strategies that are more cognitively demanding (e.g., positive reappraisal) were used with more frequency as the severity of the stressor increased (Shiota, 2006).

Although engaging in positive reappraisal may be cognitively taxing when coping with short-term stressors, this same strategy has important long-term benefits on well-being. When examining personal narratives, researchers have discovered individual differences in how people interpret negative circumstances and challenges in their life. Some individuals are able to find *positive resolution*. Their narratives reflect a sense of personal growth following important challenges in life. Narratives characterized by positive resolution are those that reflect a “coherent and complete story of a difficult event that ends positively, conveying a sense of emotional resolution or closure” (Pals, 2006, p. 1082). Similarly, longitudinal research indicates that personal narratives that reflect sequences of *redemption* have important implications for personality development. A common theme in American personal narratives, *redemption* is a narrative sequence in which one transforms suffering, adversity, or pain into a more positive experience (McAdams, 2008). People with narratives characterized by redemption evidence increases in life satisfaction, eudaimonic well-being,

1 resiliency, and physical health reported over time
2 (Bauer, McAdams, & Pals, 2008; Pals, 2006).

3 **Another important strategy** that requires cogni-
4 tive effort but has long-term benefits for individuals
5 **involves trying to find positive meaning in negative**
6 **events.** This strategy has been found to produce
7 positive emotions that help buffer against stress
8 (Folkman & Moskowitz, 2000). **Three paths to**
9 **meaning-making have been identified: (1) positive**
10 **reappraisal (i.e., finding a “silver lining”), (2) prob-**
11 **lem-focused coping (i.e., efforts directed at solving**
12 **or managing the problem causing distress), and**
13 **(3) infusing ordinary events with positive meaning**
14 **(e.g., appreciating a compliment).**

15 **Although it may seem like a trivial act, infusing**
16 **ordinary events with positive meaning is linked to**
17 **striking advantages in coping.** When a negative
18 event occurs, the individual psychologically creates
19 a positive event or reinterprets a commonplace
20 event more positively, as a way of buffering from
21 distress. In their research on caregivers of people
22 with AIDS, for example, Folkman and Moskowitz
23 (Folkman, 1997; Moskowitz et al., 1996) found
24 that even in the midst of their distress, over 99% of
25 their participants were able to find positive meaning
26 in ordinary events (e.g., appreciating friendship
27 when one lends a helping hand; noticing the beauty
28 of a flower on one’s path) (Folkman, 1997; Folkman
29 & Moskowitz, 2000). Notably, it is likely that the
30 ability of the caregivers in their study to find posi-
31 tive meaning in “run-of-the-mill” events did not
32 occur accidentally (Folkman & Moskowitz, 2000).
33 Rather, these caregivers may have *intentionally*
34 looked to positive aspects of their lives as a way of
35 coping with their distress. These deliberately culti-
36 vated positive emotions play an important role in
37 the coping process: Positive reappraisal generates
38 experiences of positive emotion even amidst stress.
39 In turn, these positive emotional experiences can
40 provide the needed psychological lift to help people
41 continue and move forward in their lives (Folkman
42 & Moskowitz, 2000).

43 Benefit-finding in the midst of adversity allows
44 individuals to find meaning in important life chal-
45 lenges. Mounting research evidence shows that
46 being able to find benefits in chronic illness or pain
47 can be protective against cardiovascular illness (e.g.,
48 high blood pressure and other cardiovascular ail-
49 ments). There is a distinction between benefit-find-
50 ing and benefit-reminding, although both processes
51 work hand-in-hand (Affleck & Tennen, 1996;
52 Tennen & Affleck, 1999). Benefit finding is the
53 process of considering good things that can arise

from one’s misfortunes (e.g., growth, wisdom, com-
petence, strengthened values). A related coping
strategy, benefit-reminding, is described as the cog-
nitive strategy marked by an *intentional* reminding
of previously found benefits. Both strategies have
been shown to predict important health outcomes,
such as less rheumatoid arthritis pain and lower
psychological distress (Danoff-Burg & Revenson,
2005), lower depression scores, greater social sup-
port, more physical activity among HIV-positive
men and women (Littlewood, Venable, & Carey,
2008), and decreased chronic pain (Tennen, Affleck,
& Zautra, 2006).

Do positive emotions facilitate benefit-finding
and benefit-reminding, or do these coping strategies
produce positive emotions in the midst of impor-
tant life challenges? Bower and her colleagues
proposed an integrative model that describes psy-
chological pathways to explain the relation between
benefit-finding and health (Bower, Low, Moskowitz,
Sepah, & Epel, 2007). One pathway focused on the
important role of positive affect. The authors sug-
gested that positive affect increases as one tries to
find benefits in adversity, thereby producing advan-
tages in health (e.g., lower rates of mortality). They
also suggest that benefit-finding might help to
buffer against future stressors, allowing people to
adapt to future stressors more adaptively, flexibly,
and effectively. In line with this idea, research shows
that positive affect buffers the effect of high pain
and high interpersonal stress among women with
fibromyalgia and osteoarthritis (Zautra, Johnson, &
Davis, 2005). Other supportive evidence can be
found in studies showing that positive affect may
buffer physiological reactivity. Individuals who are
rated as happier have lower daily cortisol levels and
lower ambulatory heart rate (Steptoe, Wardle, &
Marmot, 2005). In an experience-sampling study,
greater daily positive affect was associated with lower
blood pressure (Ong & Allaire, 2005).

Automatic processes of resilience

Much of the empirical research on the nature of
coping has been focused on deliberate, or controlled
processes; however, recent research shows that
aspects of emotion-regulation that are activated via
automatic processes may be just as pervasive (e.g.,
Bargh & Williams, 2007; Mauss, Bunge, & Gross,
2007). This section will focus on automatic pro-
cesses of resilience, with specific focus on the auto-
matic activation of positive emotion in the service
of coping with stress. Indeed, although it may often
involve conscious processes, emotion regulation

does not always require awareness or explicit strategies (Gross & Muñoz, 1995), and therefore can be unconscious and automatic.

Automatic processes of resilience can operate in two ways. First, positive affect can be automatically activated in one's environment in the midst of a stressful experience, helping to down-regulate the negative experience. In this view, automatically activated affective responses serve as an organizing force, thereby disrupting whatever other processes may be operating at the time. When undergoing a stressful experience, certain sensory experiences can activate positive affect in the service of coping, even outside of one's conscious awareness. For example, the feel of warmth from a cup of tea can soothe an individual; the smile from a passerby can trigger feelings of social connectedness and support; or the smell of the ocean air that reminds one of a pleasant vacation can elicit feelings of contentment. As each of these examples illustrates, perception can introduce the idea of action, which has important implications for affective response (Chartrand & Bargh, 1996; Chartrand et al., 2006) and social behavior (Bargh & Chartrand, 1999). Through the automatic process of perception, sensory experiences can activate positive affect outside of one's conscious awareness, thereby interrupting the trajectory of the stressful episode before it can fully unfold.

In a sense, these "bottom-up" processes of perception can activate responses in systems that are typically associated with emotional responding (e.g., autonomic changes, behavioral action, facial action; Barrett, Mesquita, Ochsner, & Gross, 2007). As such, the information from valenced environmental stimuli can be computed rapidly and can influence subsequent behavior and experience (Barrett et al., 2007). This has important implications for the coping process. Indeed, automatically activated positive emotion can fuel recovery from stress with minimal effort, freeing up important resources to use for coping with the stressful situation.

A second way that automatic processes of coping can occur is via implicit goals for coping, which can be automatically initiated and enacted outside of one's conscious awareness (Bargh, 1989). Empirical research demonstrates how goals can be automatically activated to influence behavior. For example, participants who are subliminally primed with the goal to form an impression about someone have been shown to successfully complete the goal (effective recall of behaviors and clear organization of information in memory) without the ability to articulate

why they behaved that way or even *that* they behaved that way (Chartrand & Bargh, 1996).

Research on automatic emotion regulation (Mauss et al., 2007) shows that it is possible for an implicit goal to alter one's emotional experience in a given situation automatically. In other words, the goal to modify an aspect of one's emotional experience can occur without making a conscious decision to do so, without expending attentional resources, and without deliberate control. For instance, when the goal to control one's anger (vs. express it) is subliminally primed, participants report lower levels of felt anger. Moreover, there is no evidence of physiological cost to an individual for controlling versus expressing one's anger (Mauss et al., 2007). These findings indicate that implicit goals to cope (in this case, to control one's emotion) can indeed be automatically activated in the service of minimizing stressful experiences. These automatically activated coping goals involve minimal costs to individuals and therefore can produce beneficial outcomes for well-being and psychological health.

Recent research has investigated the automatic and controlled processes of resilience. Participants were experimentally induced to experience sadness via a mental visualization exercise. Immediately following the sadness induction, participants were randomly assigned to experience positive emotion via automatic or controlled processing. The automatic processing task included a supraliminal priming task (unscrambling words to form a sentence, with one of the embedded words serving as a positive emotion prime). The controlled processing task involved positive reappraisal (asking participants to find positive meaning in the sadness they just experienced). Participants then completed a cognitive flexibility task (Stroop, 1935). Cognitive flexibility is important for selecting the optimal coping strategy at the appropriate time (e.g., Sapolsky, 2004) and thus is important for resilient responding in the face of stress. Continuous measures of cardiovascular responding were collected throughout the experimental session.

Findings indicated that participants induced to experience positive emotion via automatic processes showed greater cognitive flexibility compared to those induced to experience positive emotion via controlled processes. Automatic and controlled processes also differentially predicted physiological recovery following the stressor, with automatic processes producing faster cardiovascular recovery

from sadness compared to controlled processes (Tugade & Alpern, 2009). Because of the cognitive effort usually required to use problem-focused coping, positive reappraisal may be difficult in the midst of an immediate, short-term stressor. In these challenging situations, having positive emotions easily accessible to an individual may produce greater coping efficacy. **It is important to note that positive emotions generated via automatic processes may confer their benefits in response to short-term stressors. As reported previously in this chapter, positive emotions generated via controlled processing have important benefits for long-term coping** (Bauer, McAdams, & Pals, 2008; Pals, 2006).

Intersections Between Automatic and Controlled Processes

Two distinct though interacting dual-process models of coping are the focus of the present chapter. One model focuses on the intersections between positive and negative emotions in the coping process. Growing attention is focused on this model, which shows that positive emotional experiences have important functions in down-regulating distressing experiences. Along these lines, research indicates that there are individual differences in the capacity to use positive emotions to cope. The second model discussed in this chapter focuses on the interplay between automatic and controlled processes to better understand how positive emotions are generated in the service of coping. **A newer model in the stress and coping literature, this explores the mechanisms that promote resilience in the midst of short-term and long-term stressors in one's life.**

At the crux of these dual-process models is the dynamic and multifaceted nature of resilience. **As the findings reviewed in this chapter indicate, positive emotions can be deliberately cultivated cognitively (e.g., positive reappraisal) or behaviorally (e.g., smiling while feeling sad) to help down-regulate negative emotional experiences. Over time, as with other controlled processes, these deliberate coping strategies can become automatized.** For resilient individuals, cultivating positive emotions when coping with stress can become an automatic behavior, just like any other behavior or complex action sequence can become automatized with repetition (Bargh & Chartrand, 1999; Norman & Shallice, 1986). Automatic skill acquisition (like emotion regulation) depends on the frequent and consistent pairing of internal responses with external events (Shiffrin

& Dumais, 1981; Shiffrin & Schneider, 1977). Supportive evidence can be found in research on the positivity effect, which shows that as one ages, automatic processes of coping are more likely to be enacted (Carstensen & Mikels, 2005). For instance, older (vs. younger) adults quickly shift attention away from negative stimuli to positive emotional stimuli (Isaacowitz, Wadlinger, Goren, & Wilson, 2006a, 2006b; Mather & Carstensen, 2005). This coping strategy may have begun as a deliberate process, but became automatized with age after repetition across different situations throughout one's life. Emotion regulation skills begin to develop as early as infancy (Posner & Rothbart, 1998). It is possible that one can consistently use coping strategies that elicit positive emotions (e.g., positive reappraisal, benefit-finding, infusing ordinary events with positive meaning). Over time, these strategies can emerge independent of conscious intention (Bargh & Chartrand, 1999) and facilitate effective outcomes of coping with stress.

The intersections between automatic and controlled processes of resilience can also be found in research on meditation practices. **Empirical research shows that novice individuals can be trained to use two types of meditative practices (mindfulness, loving-kindness meditation), which reap important benefits in physical and psychological functioning.** Mindfulness-based stress reduction (MBSR; Kabat-Zinn, 2005) involves techniques that cultivate greater awareness of the mind and body. Novice meditators who were trained on MBSR techniques over the course of 8 weeks evidenced greater left-hemispheric brain activation, a region consistently shown to be associated with positive affect (Davidson et al., 2003). **Another meditation practice, loving-kindness meditation (LKM), involves actively cultivating positive emotions in order to learn about the nature of one's emotional experiences. In a field study, Fredrickson and her colleagues trained working adults to practice LKM in their daily lives over the course of 9 weeks. Findings indicated that those who practiced LKM evidenced increased daily experiences of positive emotions, which in turn helped to build personal resources, including resilience (Fredrickson et al., 2008).** Together, these findings indicate that meditation may at first be a deliberative practice; however, over time the emotional and bodily awareness that result from meditation may produce increases in daily positive emotion, which in turn may interrupt the stressor before it fully unfolds and help to buffer against future stressors.

1 Indeed, attention to one's own affective experiences
2 can promote positive emotion knowledge (Tugade
3 et al., 2004), which is important for coping and
4 resilience.

5 **Conclusions and Recommendations** 6 **for Future Research**

7 Several areas of future research on positive emotions
8 and resilience bring exciting possibilities for build-
9 ing on existing paradigms in stress, health, and
10 coping research. For instance, future research may
11 benefit from considering the cultural proscriptions
12 associated with the expression and experience of
13 positive emotion. The Affect Valuation Theory
14 (AVT; Tsai, Knutson, & Fung, 2006) is useful in
15 understanding cultural differences in the positive
16 emotions that people ideally want to feel (i.e., "ideal
17 affect"). For instance, compared to Hong Kong
18 Chinese, European Americans place more value on
19 high-arousal positive emotions (e.g., excitement)
20 and less value on low-arousal positive emotions
21 (e.g., calmness) (Tsai et al., 2006). Future studies
22 may be aimed toward investigating whether the
23 AVT can help explain the different types of positive
24 emotions that are useful for health and coping across
25 different cultural groups. The AVT might also be
26 useful investigating whether low- or high-arousal
27 positive emotions are more easily accessible among
28 people of different cultures.

29 Future research might also capitalize on method-
30 ological advances in science to investigate the
31 intersections between positive/negative emotion
32 and automatic/controlled processes associated with
33 resilience. Experience-sampling methodology (ESM)
34 has been used effectively in stress, coping, and health
35 research to investigate within-person patterns of
36 emotional experience as they pertain to stress and
37 health (e.g., Conner, Tugade, & Barrett, 2004; Ong
38 & Allaire, 2005; Ong et al., 2004; Zautra et al.,
39 2005a,b). Beyond assessing whether positive emo-
40 tions are experienced during stressful circumstances,
41 forthcoming studies might use ESM to investigate
42 whether actively cultivating positive emotions in
43 the midst of stress can become automatically acti-
44 vated over time. ESM might also be useful in inves-
45 tigating which positive emotions are more easily
46 activated under stressful circumstances.

47 Different positive emotions may confer their
48 benefits onto stress and health in distinct ways.
49 Advances in research might focus on the differentia-
50 tion of positive emotions in the coping process. To
51 illustrate, recent research has shown that general pos-
52 itive affect is associated with a lower risk of mortality

among chronically ill individuals with diabetes, 53
even when controlling for negative affect and other 54
risks of mortality (Moskowitz, Epel, & Acree, 55
2008). In a comparison sample of not chronically 56
ill participants, positive affect did not predict mor- 57
tality risk. When teasing apart different experiences 58
of positive affect (as assessed by four items on the 59
CES-D positive affect subscale; Radloff, 1977), a 60
somewhat different pattern emerges. For chronically 61
ill individuals, certain positive affects (measured by 62
the items "enjoyed life" and feeling "happy") con- 63
tinued to predict lower risk of mortality, whereas 64
other items (measured by "self esteem" and feeling 65
"hopeful") were no longer significant predictors 66
(Moskowitz et al., 2008). Other research examined 67
the associations between two positive affective 68
dispositions (trait hope and trait curiosity) on the 69
prevalence and incidence of hypertension, diabetes, 70
and respiratory tract infections over a 2-year period. 71
Higher levels of trait hope were associated with 72
a lower prevalence of hypertension and diabetes 73
and a lower incidence of respiratory tract infections. 74
In contrast, higher levels of trait curiosity were asso- 75
ciated with a lower prevalence of diabetes and a 76
lower incidence of hypertension (no association 77
with respiratory tract infection; Richman et al., 78
2005). Together, these studies demonstrate that dis- 79
tinct positive emotions (joy, pride, happiness, hope, 80
interest/curiosity) are differentially associated with 81
physical health outcomes. Future studies that sys- 82
tematically investigate how a larger range of positive 83
emotions may be associated with health outcomes 84
and research that investigates the potential mecha- 85
nisms that underlie these associations would help 86
advance current research in important ways. 87

88 **Summary**

89 The research reported in this chapter suggests that
90 strategies that elicit positive emotions are important
91 for establishing beneficial coping outcomes, espe-
92 cially for resilient individuals. Resilient people may
93 initially use positive emotions strategically while
94 coping with a stressful situation, actively cultivating
95 positive emotions to down-regulate distress. To the
96 extent that this same strategy is enacted over time,
97 the conscious strategy can become automatized
98 (Bargh & Chartrand, 1999). Using positive emo-
99 tions to cope, then, may be likened to mastering
100 a skill. With repeated practice, the skill becomes
101 automatic, requiring only minimal attention or
102 cognitive effort. These benefits can be valuable for
103 coping in the short run and can also have long-last-
104 ing benefits for an individual.

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