ARTICLE

Zautra's Terror
-Thinking about emotions, stress, and health

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A good book is like a fine wine: it ages well as it awaits your pleasure. So it is with Alex Zautra's (2003) book, *Emotions, Stress, and Health*[1]. Zautra challenges us to face the paradox of emotions by reflecting upon our ability to integrate *positive* and *negative* in a two-dimensional, relational, field. The demand this places upon our limited cognitive capacity - and the potential stress jarring the positive illusions we may hold about a positive psychology - can playfully be described as Zautra's Terror.

Errors of division

A common error when reflecting upon reality is the error of division, a property of minds and their natural desire for category and structure. A living system with a preference for division does not imply division in the living system itself. Such a reflective preference might, for example, lead us to separate childhood from adulthood and aging; and yet, from a dynamic systems perspective, there is only continuity, there is only the dance. Systemic thinking implies that we seek to overcome the many divisions the mind imposes and focus instead on the relationships that exist, relationships that define a complex unity. As evolution sees us accumulate artefacts of mind with accelerated pace [1], the adaptive response in the face of the accumulating complexity in the concrete and abstract realm should be to slow our thought and allow for dialogue to return us to shared coherence [2]; in this way we can reflect with greater awareness on the complex whole, avoid the closure that rapid demand can produce, and open ourselves to the intricate beauty and natural richness of life. With shared coherence, we stand ready at the still point, ready to dance.

Zautra (2003) presents the case: models of healthy adaptation have created a distinction, based on a false dichotomy, between defense and growth. Historically and geographically in the United States, the east coast psychodynamic schools have focused on defense, while the west coast humanistic schools have focused on growth - invariable conflict across time and space being the result. Models of defense focus on how we prepare for and adapt to pain, stress, and other threats to psychological adjustment; better adjustment comes through coping well and learning to employ mature defenses. Fundamentally, these are models that acknowledge human frailty and seek to promote hardiness in the face of challenges to our well-being. Conversely, models of growth focus on developing the positive, not defending against the negative, offering ways to embrace even the most stressful of life experiences; opportunities are ever-present and therapeutic interventions focus not on coping or mature defense, but on guidance toward a more actualized self.

The false dichotomy is reinforced by the view that defense and growth are points along a continuum from illness to wellness. Abraham Maslow presented a popular version of this view [3]. In his framework, individuals focus first on survival and security needs, and as those needs are met, 'higher' needs emerge, such as a need for social ties and, eventually, self-actualization. Thus, a bridge between defense and growth was built by Maslow, making growth contingent on mastering the art of defense. But Maslow was mistaken – positive strivings do not depend on the satisfaction of more basic needs – each day can see the struggle for survival and the optimization of happiness, mastery, and growth, occurring together. Hertzberg recognized this in his analysis of the dual purposes of people at work [4], whereby they seek both to minimize dissatisfactions from job stressors and maximize job satisfaction arising from opportunities and accomplishments. Thus rather than conceptualizing a continuum, or a one-dimensional view of well-being, Zautra (2003) suggests we keep the two dimensions of human motivation, defense and growth, separate, and engage in two-dimensional thinking about human adaptation. We need to *broaden-and-build* positive psychology into a modesty psychology that helps us to understand how we *defend-and-grow*. Successful development is marked by the richness of emotional experience, where the person is capable of feeling joy and grief, anger and humility, pleasure and pain. When we engage our weaknesses they can become our strengths.

Separating positive from negative emotions

In order to understand the complexity of adult emotional well-being, it is important to understand the complexity of emotions. Emotions are systems of neurophysiological response; they are present from birth, in simple forms, and become more differentiated and complex over the course of infant, child and adult development, until old age, where complexity reduces to a certain extent [5]. Different emotions are associated with different action-tendencies, and early views, such as those of William James and Carl Lange, went so far as to suggest that emotions are a consequence rather than a cause of our action-tendencies. Clearly, from a dynamic systems perspective, any such simple cause and effect modelling is not feasible [6]. Also, human behavioural responses do not correspond to one and only one emotional display; cognition plays a role in how physiological sensations and behavioural responses are interpreted.

However, psychologists who attempted to explain emotions by reference to cognitive appraisal [7] also ran into difficulties. The reality is that a good portion of our emotional responding occurs without awareness [8]. It was only in the 1990s, with the mainstream developments of brain imaging technologies and their application to the study of emotion, that researchers began to view emotions as

[1] Oxford University Press.

having a somewhat modular existence in the developing brain, acting in a bottom-up or automatic fashion to shape cognition and behaviour, and being shaped in turn by top-down or the consciously controlled influences of cognition and behaviour. Earlier attempts to separate mind from emotion, rooted in our western philosophical bias to separate logos from mythos [9], were labelled by Antonio Damasio as Descartes's error [10].

As systems of neurophysiological response, emotions manifest in two main forms: positive and negative. All categorizations of basic emotions report a higher proportion of negative emotions [11], and evolutionary psychologists [12] have commented upon the adaptive significance of this negativity bias. As Zautra notes, natural selection favours those who develop a greater appreciation for what might harm them and our bias in attending to negative affects more than positive ones can be attributed to the simple fact that 'death has to win only once' (p. 12).

Nonetheless, with the development of a cerebral cortex, the full expression of emotions, with their primary source in midbrain structures of the brain [13], is a function of self-regulating activities that evaluate events in light of goals, standards, and relationships [14]. Throughout our evolutionary history, this dynamic interplay of emotions and goals has seen two forms of emotion emerge, each with different and independent functions. The first evolved as a defense system, providing the negative emotion necessary to signal and respond to threat. The second evolved as a growth system, providing the positive emotion necessary for optimal well-being, nurturance, and play.

As a consequence, emotional experience can appear as a world of paradox. We can enjoy bittersweet memories of past innocence and suffer anxious excitement about an upcoming romantic engagement. The implication for therapeutic activities is that they should allow for, or accept [15], conflicting emotions, and stop worrying about whether we are happy or not, as we are probably both. However, when our linguistic representations of emotions, supported by psychological theory [16] evaluate emotions on a continuum from highly negative to highly positive, then we are bound to fall victim to an uncomfortable dissonance created by the paradox of positive and negative affect residing in peaceful coexistence.

Nonetheless, happiness surveys [17] have found that the number of positive emotions people characteristically experience (e.g., 'particularly excited or interested in something') is independent of the number of negative emotions experienced (e.g., 'very lonely, remote from other people'). Furthermore, different social conditions predict positive and negative affect. In one study [18], being financially strapped was associated with more negative affect, but not less positive affect; participation in social groups was associated with more positive affect, but not less negative affect.

As Zautra notes, positive and negative activation states have different neurochemistry and different neurobiological functions. Evidence points to the depletion of serotonin associated with negative emotion and the presence of dopamine associated with positive activation [19]. Positive and negative emotions also appear to activate different brain structures. Participants who describe themselves in positive terms (e.g., as excited, active, interested) show greater brain activity over the left frontal cortex compared with the right frontal cortex; conversely, participants who describe themselves in negative terms (e.g., unhappy, depressed, anxious) show the reverse pattern, with more right than left frontal lobe activation [20].

Independent emotion systems and their functional dynamics under stress

A picture is emerging which suggests that access to the complex of both positive and negative emotions offers greater adaptive flexibility to the developing person. Stress may spoil this adaptive complexity to a certain extent. The disruption of homeostasis associated with stress contributes to allostatic load (an index of cumulative wear and tear on multiple physiological systems). The ideal system is one that is fast to respond and fast to recover. McEwan [21] defines adaptations to stress as forms of allostasis: the ability to achieve stability through change. He identifies four types of conditions associated with heavy allostatic load: repeated stress, failure to find a successful adaptive response to a repeated stressor, failure to shut down the stress response, and a blunted response that leads to compensatory hyperactivity in other mediators. Biological systems are open systems. Under certain conditions, open systems approach a time-independent state, the so called steady state. The steady state is maintained in distance from true equilibrium and therefore is capable of doing work; this state is called dynamic equilibrium in systems biology. Stress disturbs the distribution of energy available to perform work. For example, energy devoted to the work of wound healing is slowed considerably during periods of distress [22].

Zautra explains it well. The advantage of a separate positive and negative emotion system is in terms of depth of information processing. The flexibility associated with this depth comes from the way in which two emotion systems operating in synchrony allow for richer and more complex evaluations of ourselves, our motivations, and how our interactions in the world affect us. Under stress, our field of vision is narrowed [23], and our judgements turn more black and white, more definite and simplified [24]; the process of simplification can be observed in conditions that transform a two-dimensional emotion into a more one-dimensional system. For example, during stressful moments at work, the degree of independence of ratings of positive and negative emotion begins to collapse, with good feelings becoming less likely in the presence of negative emotions [25].

Health

Health researchers often take a dim view of our search for happiness, particularly when it leads us to engage in risky behaviours. When we search for 'peak experiences' by jumping out of airplanes, climbing dangerous cliffs, or seek pleasure by engaging in unprotected sex, etc., we run the risk of punishments more severe than any rewards. Following a great celebration, fuelled by copious amounts of wine, the probability of great disaster increases – sour grapes as varied as the tastes to be savoured await those of us who over-indulge. It is for this reason that Socrates argued so often and so strappingly for the pursuit of knowledge and virtue, over the pursuit of pleasure alone, as essential to our happiness. If we seek the good-life as a long-term goal, a healthy balance between pain and pleasure must be struck. Psychology has often been slow to understand the significance of this philosophical perspective; those views that largely ignore the *integration* of negative with positive[26],

or focus only on the negative [27] fail to demonstrate the balance required.

The wisdom of balance entails good judgement [28]. If joy is sustained for a period - this *sustained period* being fundamental to our definition of happiness as satisfaction with one's life as a whole [29] – then, it is sustained as a dynamic equilibrium, where cognition and emotion are integrated in contexts where complexity can be mastered and mood optimized [30]. In this sense, happiness, in feeling, serves a dual function: to preserve itself as an expressed part of the organism, and to support adaptation [31]. In this sense, there is no conflict between Darwin's notion of survival of the fittest and our drive to optimize well-being, so long as the two are well-balanced, and well-integrated, functionally.

In preserving itself thus, in dynamic equilibrium, positive emotion certainly plays an essential role in the maintenance of health, which, in turn, allows for the long-term view, the long-term plan, prolonging the good-life, by supporting longevity [32]. A sense of mastery, optimism, and self-esteem, speed the process of recovery after coronary surgery [33]. People who report high levels of positive emotion in the days prior to being exposed to the flu virus are less likely than people with lower levels of positive emotion to contract the flu after exposure [34].

The ability to cognitively transform stressful events into opportunities for growth, developing strength, and new learning may be a skill that we get better at as we move from childhood, through adolescence and into adulthood [35]. As normal adults grow older, they tend to report less negative mood and more positive mood [36], and they selectively attend to and retrieve positive over negative information [37, 38]. This *positivity bias* has been interpreted as adaptive and beneficial to health [39]**.** The majority of adults commonly use 'positive conversion' strategies; the interesting thing is that our efforts at positive conversion do not necessarily lower our levels of distress in response to stressful events; they may, however, increase levels of positive emotion [40].

For Zautra, models of mental health that offer us a view of adaptation as more than solely designed to resolve emotional distress, but focus also on our view of ourselves as effective agents in the world, how we establish meaningful social relations, and our ability to find coherence and deeper meaning in our lives during troubling times, all have an added advantage – they allow us to understand how moments of joy may strengthen us even if they do not improve our defenses against psychological upset.

Intelligence

John Dewey, in his classic book 'How we think' [41], characterized reflective thinking as an art form that requires as much feeling as it does reason. One important attribute of the reflective thinker, says Dewey, is the capacity to endure a protracted state of doubt. Without the emotional control that this capacity entails, we would never have the patience to arrive at reasonable conclusions and make reasonable decisions, when careful deliberation is required. When evolution added the cortex of self-reflective consciousness, it did not remove the midbrain of passion and instinct. Because emotion plays such a central part in how we adapt in this world, we might argue that the wisest course of action for the active self-reflective mind is to seek a seamless integration of cognition and emotion. In this sense, intelligence is always more than computation speed, attentional control, and capacity for pure reason; intelligence, as Alfred Binet originally described it, is our ability to adapt. Restricting our view as to what this entails is an error that only simple-minded thinking will produce. An evolving dynamic system is a complex system.

Zautra (2003) defines three dimensions of *emotional intelligence* that are critical here: (1) the ability to effectively perceive, communicate, and manage negative emotions, (2) the ability to experience, communicate, and sustain positive emotions, and (3) the capacity to preserve the boundaries between positive and negative emotions in order to understand the complex emotions in oneself and others. According to Seligman [42], until recently, when 'positive psychology' began to focus on the positive emotions, psychology suffered a bias, with most investigations focusing on the first, the negative. Positive psychology entered with an agenda to focus on the second, the positive - a necessary recalibration of the system. However, in so doing, it largely ignored the third, how positive and negative *work together*; the founding fathers of the school did not outline a theoretical model or research agenda that would help us to understand the third capacity – dynamic integration[2].

Thinking psychologically requires systemic thinking. In a system, everything is related to everything else and thus integrated. The only question is whether or not our science reflects that integration in its thinking. A living system cannot re-design its own inherited structure through force of imagination alone. Rather, its success is best defined by how well it works with what it has [43]. For emotions, we have two, the positive and the negative. Intelligence requires we work with both.

Psychologists are not always comfortable with the way nature and nurture cast the dice for each of us. Our saving graces, however, are many. For example, as we age, the influence of genetic endowment on personality and adaptive outcomes, weakens; and our ability to regulate and control the contents of our consciousness grows in strength from childhood to adulthood [44].

Personality traits are related to emotional intelligence to the extent that they bias the person to respond in a characteristic way. For example, people with the highest average negative affect also have the highest scores in neuroticism, a general bias to focus on what has gone, or might go, wrong. Those higher in neuroticism show a greater negative reaction to viewing short films of graphic medical procedures [45]; conversely, higher levels of extraversion (i.e., being more outgoing, social, and sensitive to rewards) is associated with

[2] Equally, I continue to scan the positive psychology literature for a useful statement on the systemic *relations* between character 'strengths' and character 'weaknesses' (i.e., their *co-dynamics* over time in the path to the 'good life' and 'flourishing'). Intra- and inter-individual specification of the structure, process, and function of actions - the gestalt of motivation, emotion, cognition, and behaviour - defined as *strong* and *weak* in different embodied and embedded contexts is needed. Grounding in dynamic systems theory is necessary for relational mapping. False dualisms abound. The popular antithesis between motion and rest becomes meaningless in the theory of relativity; so too the antithesis between strength and weakness in modest psychology - *coincidentia oppositorum.*

greater brain activation to positive images [46]. Individual differences in positive and negative emotion, rooted in evolved interindividual differences in the structure, process, and function of action dynamics, bias our cognitive system to process and respond to input in very different ways.

Once again, vulnerability to negative affect and the experience of positive affect may be *independently* related to the two sets of dispositions (i.e., those that bias us in a positive or a negative direction in our patterns of attending, encoding, and responding). For example, Smith [47] found that vulnerability factors associated with greater negative affect from week-to-week, in a group of 172 older women with arthritis, included neuroticism, anxiety, depression, feelings of helplessness over arthritis pain, an avoidant style of coping, and a pessimistic attitude. Conversely, variation in positive affect from week-to-week was related to extraversion, optimism, purpose in life, and an active coping style. Significantly, people with these positive attributes were neither hurt nor helped in their struggle to regulate negative emotions.

Nonetheless, it may be that a positive bias in self-representation and evaluation is the better bias when it comes to the resilience needed to recover from painful psychological experiences. A study that traced the patterns of recovery in adults associated with the pain and distress of bereavement, found that those who demonstrated highest recovery rates up to 25 months after the death of their spouses were men and women whose self-evaluative narrative had approximately *five positive statements for every negative statement* [48]. Importantly, people who told stories about their past relationship that were *exclusively* positive did not recover as rapidly as those whose stories were more emotionally complex.

Work

If Freud was correct in stating that healthy personality development allows one to love and to work, then we might wonder about the relationship between the two: do we love to work? Certainly, work becomes central to our purpose in life, structuring our waking day, allowing access to a meaningful network of people and activities outside of the home. In essence, work provides *engagement*, without which we cannot live to our fullest potential.

By asking participants about critical work life events that were experienced as exceptionally good or exceptionally bad, Herzberg and colleagues [49], classified 10 basic aspects of working life: achievement, recognition for achievement, salary, working conditions, supervision, company policy and procedures, interpersonal relations, responsibility, advancement, and personal growth. Interestingly, descriptions of positive and negative work episodes were very different in their content. Negative experiences were associated with poor supervision, outdated and/or unfair company policies, adverse working conditions, and interpersonal conflict. However, good supervision, working conditions, interpersonal relations, and fair/modern company policies were rarely mentioned in the description of positive episodes at work. Rather, achievement, recognition for achievement, increased responsibility, advancement opportunities, and personal growth were the defining features of positive job experiences. Once again, rather than think of job related factors as operating along a continuum from negative to positive, Herzberg and colleagues argued that two factors are important: the need for fulfilment through satisfying work and the need to protect against harmful social and physical job contexts.

Level of effort does not, by itself, increase risk of health problems. Increased cardiovascular load at work is only unhealthy if a person does not return to normal levels after work [50]. Rather, it is loss of control or decision-making latitude at work in the presence of high effort that is key predictor of cardiovascular illness [51]. If someone else dictates the methods and flow of the work, then engagement is extrinsically driven and lacks the intrinsic motivation so essential to our happiness. The context of 'work' or engagement is not all that important. Studies have found that intrinsically rewarding, engaging 'flow' experiences can emerge when fastening screws on an assembly line, or performing the most complex heart surgery [52]. Authority over key aspects of work will bolster self-esteem, reduce key sources of stress, and allow for a broadening of emotional experience [25].

In the year 2000, Firth-Cozens alerted us to an almost two-fold increase in levels of worker stress over the previous 10 years [53]. The pressure is to work harder, faster, the bar rising every year in every respect as someone loses and someone wins, one leviathan effort replacing another. Management practices don't always help: knowledge that uncertainly can fuel the arousal for fight as well as flight can be implicitly used as a subtle strategy of manipulation, breeding compassion out of the worker and replacing it with a killer instinct. The health-related impact of work stress takes years to manifest – better burn them up while they are young and strong. And yet, this is a classic illustration of the tragedy of the commons; if everyone burns up, there is nothing but ashes left. Modest calm is required. The argument against a hierarchical organization in society only has validity when those in power manipulate those they hold power over. When wise men and women sit thinking with the board of directors, the potential for system change and the maintenance of a dynamic equilibrium is ever present, ever a challenge [54]. When we take the long view and think in terms of human development and aging, we can begin to see the need for the wisdom of aging, a wisdom we are likely to destroy if we burn the *flow* out of men and women before they reach their intellectual and emotional prime in their mid 50s.

Aging

It is said that biology flows downhill. A bias in our thinking often leads us to believe that nurturing the mental health of children provides us with the best hope for the future. Older adults are seen as somehow fixed in stone. However, if biology flows downhill, *what* flows downhill is surely important - the mental health of every generation depends on the mental health of its elders. John Bowlby's [55] thinking on the intergenerational continuity of emotional attachment styles – later confirmed by others [56, 57] - suggests to us that the working models used by parents to classify relationships and for affect regulation are often passed on to their children.

Paul Baltes argues that the energy devoted to growth is increasingly allocated to defense against loss as the adult moves into old age [cf. 44]. Accepting growth as a purely biological phenomenon, the argument for a shift in allocation of resources from growth to defense is reasonable and sound. However, if we conceptualize growth in cognitive-social-emotional terms, then aging opens as a flower that can become

aware of the whole garden. For example, in extending Erik Ericsson's thinking, and consistent with the notion that biology flows downhill, Vaillant [58] argues from prospective data that the fifth and sixth decades of life are often characterized by a primary motivation to give back to the next generation. After parenthood, adults often act as 'keepers of the meaning' and provide the glue for stable and supportive intergenerational exchanges. The growth we then see is a widening of the social-emotional perspective, a widening that is critical for coherent development of the system as a whole.

For such a widening of perspective to be achieved and used, it becomes important that stress and negative emotions do not *collapse* the view of the horizon. With time becoming more and more of a limited commodity, the aging adult often learns to regulate their emotions to a greater extent than do younger adults [59]; they attend to 'emotion motives' moreso than do younger adults. Carstensen et al. [60] found that negative feelings tended to dissipate faster in older adults when compared with younger adults, and that positive and negative emotions were uncoupled to a greater extent in the older adults. In the language of dynamic integration theory [61] these are adults who have struck a healthy balance between the *optimization* of affect and the *differentiation* of cognitive-emotional representations.

Unfortunately, many older adults suffer conditions that make both optimal positive affect and a complex differentiated cognitive-emotional world more difficult to experience. A classic and common case in point is when the pain of chronic illnesses, such as arthritis, presses down upon the person. Pain is intimately tied with negative affect - the more pain experienced by a person with arthritis the more negative emotion they report [62]: pain, however, did not influence positive emotions, such as feelings of excitement, pride, and enthusiasm; it was the physical limitations that accompanied the disease that negatively impacted these positive expressions.

Related to chronic diseases is the burden of caregiving, the everyday strains of which can be unremitting. Rates of depression [63] and mortality [64] amongst older adults caring for a disabled spouse are significantly higher than for older adults with healthy spouses. The burden of caregiving can also have a negative effect on immune function of older adults [65]. And yet, a large percentage of caregivers remain resilient in the face of the burden. Consistent with Bandura's model of human striving, older adults who have strong beliefs in their own abilities to handle stress are more likely to achieve and sustain resilience and psychological wellbeing.

However, as noted by Zautra and colleagues [66], beliefs in one's ability to handle stress is only one side of the coin - on the other side lies beliefs concerning obtaining positive experiences. In a study of 256 older adults they found that efficacy expectations for positive outcomes defined a dimension of beliefs separate from expectations for negative outcomes. You can be good at one but not the other, much like you can be good at neither or both. Examining physical and mental health outcomes over 4 years later, Zautra et al. found that those older adults who believed in their ability to cope with stress were better inoculated against anxiety and depression in the face of functional declines. Beliefs in the ability to sustain positive engagements did not protect against mental health downturns; they did, however, protect against age-related decrements in physical functions.

As such, ability to activate both systems of defence and systems of growth may produce an additive or multiplicative benefit: growth protects one against physical declines and thus reduces the requirement to defend against the stress of these losses. Even in nursing home settings where efficacy beliefs are not usually part of institutional culture, encouraging residents to take a more active role in caring for themselves increases vigour, engagement, health and longevity [67]. Efficacy of defence in the face of stress is important for the aging person. But sustained activation of the defense response can cause problems, as glucocorticoids such as cortisol, released as a response to stress, can kill neurons in the hippocampus, a brain structure intimately associated with memory performance [68].

Also, depression, contributing to a hypercortisol response to stressful events, further exacerbates the problem of hippocampal atrophy [69]. The relationship between depression and cognitive decline is so powerful that clinicians often have difficulty distinguishing depression from dementia in older adults who present to memory clinics, while others recommend antidepressive medication as a way to protect against cell death in the hippocampus.

Equations of defense and growth can operate in subtle ways; positive social ties can protect against the onset of dementia [70]; older adults are inoculated against stress when their esteem for themselves in relatively high [71]; aerobic exercise training can work to alleviate depression in older adults [72] and improve cognitive performance [73].

Overall, there is a balance to be struck between the positive and negative emotions as we age, between growth and defense. Joan and Erik Erickson talk about the balance achieved between integrity and despair. The ability to retain positive emotion and self-esteem while accepting pain and loss is a subtle art. When mastered, it allows for a full connection with one's emotional life, a connection that serves as a model of integrity for future generations.

Zautra (2003) says it well:

> *"We all have trouble facing our own errors of judgement and coming to terms with the consequences of those mistakes. For many, it is the fear of these memories that stands in the way of adaptation, and those barriers to health can last a lifetime…By finding meaning and purpose within the fault lines of life, we restore the richness of emotional experience of past events, and in doing so open ourselves to a full emotional life in the future. For many, this is the soundest approach to ending the siege and regaining a quality of consciousness. Perhaps, too, some of the young will listen. They would learn much about emotional complexity if they do*." (p. 221).

Community

People recognize when shared coherence is lacking whenever they try to engage in dialogue. The potential for connectedness among people can be strained when positive emotions are seen as arising primary from individual achievements, a product

of individualised trajectories of development, rather than from social relations and the fulfilment of needs for the community [74].

The reality is that social integration and social support is not a means to an end, it is an end in itself. High levels of social integration, especially for men, lead to lower heart rate, serum cholestersol, systolic blood pressure, and cortisol levels [75]. The effects on health are direct, the equations of influence simple. As a living system that has evolved group structures from the basic unit of *family*, it is little surprise that the success of human activity is so dependent on the social bond. All acts of social support are acts of mutuality, thus enriching the network of mutuality within which they emerge.

The need to belong, the need to reinforce the glue that holds communities together, are fundamental sources of striving that shape our social capital. Social capital implies a high level of trust among citizens and high levels of participation in voluntary associations and local organizations. Areas high in social capital have lower levels of violent crime [76] and residents report more positive events and fewer negative events in their lives [77]. Contrary to Freud's view that the laws and rules of community are necessary to curb aggression, people are more likely to cooperate first, punish, but then forgive dishonesty [78]. Such a pattern of social exchange, from an evolutionary perspective, makes sense; it is a pattern that, when rooted in trust, supports more collective gain and conservation of resources in the long run.

Yet, it is difficult to sustain our natural inclination to cooperate when placed into an environment where the distribution of social and economic resources is unequal. Envy can arise from unfair exclusion from the social exchange of positive emotions [79]. Acts of aggression and violence can sometimes appear to resolve the frustration and anger over being unjustly deprived of the social riches that those with more social capital have acquired [80]. Here, the pull of the positive into the negative field only serves to damage the resilience of everyone in a community.

For Zautra (2003) the key to resilience is in keeping the two emotion systems separate and affording each sufficient attention. And yet, the optimal balance is an imbalance: more attention should be devoted to our positive emotions sustaining growth. The resilient person and community respond to stress alright, but they recover their positive emotions quickly. Mindful awareness of the subtle dynamics of emotions, stress, and health helps us to assimilate the subtle connections and disconnections that emerge in a living system of interacting people. In this way we develop prescience that helps to shape the science of insight and outsight together. In this way we experience less anxiety and depression and have greater expansiveness of energy to better serve those younger and older than ourselves. In this way we see the complexity of life and accept the inevitability of change. In this way we release ourselves from defense and playfully embrace the positive within, without, and throughout, growing in a direction that prolongs potential energies of the system from one generation to the next.

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