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## Cultivated Positive Emotions Inspire Environmentally Responsible Behaviors

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## Abstract

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## Keywords

positive emotion, environmentally responsible behavior, broaden-and-build theory of positive emotions, self-determination theory, intrinsic motivation, self-regulation, flow, well-being

## Disciplines

Other Psychology

CULTIVATED POSITIVE EMOTIONS

Cultivated Positive Emotions Inspire Environmentally Responsible Behaviors

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University of Pennsylvania

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### Abstract

Existing environmental problems, such as climate change and species extinction, are partially the result of human behavior. Attempts to motivate people to reduce and alter consumption behaviors have primarily relied on the summoning of negative emotions. The author elaborates a comprehensive theory, supported by empirical evidence, showing how positive emotions can be more effective at inspiring environmentally responsible behaviors. B. L. Fredrickson's (1998, 2001) broaden-and-build theory of positive emotions is used to demonstrate how cultivated positive emotions can, expand people's awareness that they are a connected part of the Earth's living system, increase their capacity to creatively and effectively address environmental problems, and help them recognize that well-being and environmental health go hand in hand.

## PRELUDE

*From space, she looks just as she has for millennia. The depth of her blue is still beyond description. The complex swirling white patterns rising above the blue give the impression of both profound energy and staggering beauty. She appears as the embodiment of peace. What cannot be seen from space, however, is that she is sick - very sick. No one would ever know it from how absolutely stunning she looks from way up here. Not only is she very sick, but she is getting sicker every day. Her illness is not the result of some extraterrestrial menace. Her health is fading because of her own behavior – the activities of those for whom she is home. These harmful activities are making it difficult for her to flourish.*

*Her blood feels thick and heavy, making her lethargic. She is constantly stressed and anxious. The bad weather that she carries around with her all the time is really starting to affect her. She is finding it more and more difficult each revolution around the sun to shake the storm clouds that shroud her thoughts and emotions. After each daily rotation, it is harder for her to see and think clearly. Mother Earth is depressed and dismayed.*

*She knows that something needs to be done. For the past several hundred years, the behaviors of her children have been destructive. Deep down, she knows that these destructive ways can no longer continue. Unlike her children, however, her memory spans thousands of millennia. She personally identifies with all that has gone before, and she knows that those who now dominate her vast surface are a formidable foe. Though she recognizes that some treatment of her symptoms is important and necessary, just fixing what is wrong with her will not be enough to cure her. Like all living things eventually do, she has reached a critical point in her life.*

*Despite her illness, she continues to evolve, transform, and grow. It is the time for her to change – for the better. She knows that it is not a coincidence that, at the exact point in time when her illness is becoming critical, her thinking and feeling is blossoming. She senses that some profound truth is about to rise to the surface of her consciousness. Now, after billions of years of life she is having an epiphany; she now knows that she possesses the tools necessary to save her precious life. The way that she and her children will overcome illness, transform life, and flourish, is through the magnificent power of positive emotions.*

- *She has TRUST – for it is the glue that will keep all of her living parts working together in harmony.*
- *She has HOPE – for she knows that hope is the driver that will get her beyond her current state of illness and to a more positive and healthful destiny.*
- *She has JOY – for it is the energy that will flow as she heals and transforms herself to vitality and health. She also knows that joy will continue to be available to her throughout her journey.*
- *She experiences AWE – for she knows of her own excellence and beauty and it inspires her. She is also in awe of the universe. She is but a small part of something much greater, and that gives her life meaning.*
- *She feels FORGIVENESS – for she knows that forgiving the behaviors that have caused her illness will guide her now and forever because there will always be some bad that goes along with the good.*
- *She is GRATEFUL – for it motivates her to see things through to a flourishing life. There is so much to be thankful for. Many of her friends throughout the vast*

*universe are without life. She will never let her life end - it is too rare and precious.*

- *She feels COMPASSION - for it will provide her with the power of knowing that she is intrinsically good despite the mistakes she has made along the way.*
- *And, she feels LOVE – for it is the sharing of love for which all else is done.*

*The future is opening up to her – it is opening up and expanding in a most positive way. She is seeing beyond her current state of illness to an existence that is full of happiness, meaning, engagement, and good health. As in her long and tumultuous past, despite the current challenges, she will overcome, transform, and flourish. It is her destiny and she knows it.*

## INTRODUCTION

The world currently faces immense and bewildering environmental problems; climate change, global warming, species extinction, and water shortages, just to name a few. Advances in green technology are moving at breakneck speed – wind turbines are dotting our landscape and all-electric cars are on the way. Our technological resourcefulness is being applied to help us solve problems related to oil dependence, deforestation, and other practices that are wreaking havoc on the Earth’s living systems. The pace of our advancement in this area is solid proof of what we are capable of doing in the face of this seemingly recalcitrant foe.

Yet, leaders of the “green revolution” will say that the biggest challenge to our advancement is human behavior. In fact, given all of the success that we have had thus far in applying technology to solve environmental problems, the pace of economic development and, more importantly, the consumption patterns associated with this development, is outstripping what we are doing to help save the environment (Myers & Kent, 2004). Behavior does not

adhere to the technological principles that have been so astutely established and implemented during the on-going technological revolution.

Because human behavior is a primary cause of the extraordinary environmental impacts we are currently experiencing, it is important for the field of psychology to have a seat at the table. Up until now, however, that has not been the case. According to a leading environmental psychologist:

We (psychologists) must seek out and interact with the other sustainability science players. We must tell the economists, technologists, and climate modelers what psychology can do. The climate scientists are merely the messengers, the technologists merely make machines, and the economists still think largely in terms of pricing. Without the help of psychological science, these disciplines, although valuable in their own ways, will not be able to ameliorate the impacts of climate change (Gifford, 2008, p. 279).

Despite not truly having a seat at the table, the field of psychology has taken a more and more prevalent role in the global movement to save the world over the past 15 to 20 years. Through the work of psychologists, humanity is learning what it is about itself that encourages and supports the unsustainable behaviors that are leading to environmental damage. We have learned that we are not as rational as we like to think that we are - our judgments and decisions often do not turn out as we expect them to (Gilbert, 2006; Kahneman, 2003; Schwartz, 2004). We have learned that we have instinctual drives toward security and social acceptance, and these drives strongly influence our behavior (Haidt, 2006; Miller, 2009). And we have learned that “bad is stronger than good”, making dangers and threats loom larger than reality (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001).



One voice that has been noticeably absent from the conversation altogether is the voice of positive psychology – the science of human flourishing. One reason may be that it is a relatively young discipline within the field of psychology, having been established within the last decade. Another reason may be that human behavior, as it relates to environmental issues, has been traditionally communicated in terms of the avoidance of harmful effects, and positive psychology concerns itself with understanding “the good life”. The message elaborated to motivate more environmentally responsible behavior has been one inspired by negative emotions, such as fear, guilt, shame, and anger. As we will see, this approach does not encourage creative and productive solutions. It sends a strong message that climate change, and other environmental problems, are causing irreparable damage to the Earth. But it does not inspire people to take the actions necessary to stem the tide.

What is truly needed is the new scientific discipline of positive psychology to illuminate the potential that exists to inspire positive changes in behavior. Without the knowledge that positive emotions, positive engagement, and the pursuit of meaning will provide high levels of well-being regardless of consumption levels, people will not be inspired to make the behavioral changes that are necessary to turn back environmental collapse. Changes that people perceive as requiring substantive sacrifice will not be made until there is an imminent real threat. At that point, it may be too late.

This paper will specifically address how cultivated positive emotions inspire environmentally responsible behaviors. This happens in three important ways. First, positive emotions expand and deepen our awareness that we are each a connected part of a much larger living system; the Earth. With greater awareness of this interdependence, our values, intentions, and actions become transformed. Second, positive emotions broaden our vision, resourcefulness,

and capacity to creatively and effectively address environmental problems. And third, positive emotions help us to authentically connect with the things in life that are most precious. This authentic connection leads to greater happiness and well-being, and reveals indubitably that consumption levels in excess of what we need serve no purpose toward our overall life satisfaction.

We will first look at a working definition of environmentally responsible behavior (ERB). Next, we will look at why negative emotions, regardless of unbridled attempts to use them to motivate ERB, are unlikely to inspire behavior change. From there, we will journey into the world of positive emotions, and see how the broaden-and-build theory of positive emotions is a promising framework for inspiring behavior change. This section will be followed by in-depth examinations of four specific positive emotions; awe, hope, gratitude, and love, and how each can inspire ERBs. From there, we will delve into the world of human motivation by looking at self-determination theory and self-regulation. We will then see how these theories instruct ERB. And finally, positive emotions, human motivation, and ERB will be put together to formulate the beginnings of a comprehensive theory for how positive emotions can inspire human behavior to best halt the march of environmental collapse. Threaded throughout the paper, evidence will be presented showing that well-being can actually be increased by participating in ERBs. This position runs counter to the ubiquitous message that substantive “sacrifice” is required for humanity to overcome environmental collapse. This could not be further from the truth.

### ENVIRONMENTALLY RESPONSIBLE BEHAVIOR

It is important to be clear about what is meant by environmentally responsible behavior (ERB) in order to understand the ways in which positive psychology, and more specifically, positive emotions can inform and influence it. Much has been written recently, particularly by

members of the environmental and conservation psychology community, about the importance of message framing in inspiring certain desired behaviors (Pelletier & Sharp, 2008). The qualifying word “responsible” has two very different and distinct definitions. The one that first comes to mind for most people has a more negative connotation, the synonyms for which include accountable, answerable, culpable, bound, and chargeable. The depth of meaning associated with this negative connotation influences people’s opinion about the word and how they perceive their values, intentions, motivations, and actions being congruent with it. This more common definition of “responsible” may work against influencing people to act with respect for the environment as it begs for personal sacrifice and external control. Even though sacrifice is often the clarion call for ERB, this message is generally incompatible with the kind of motivation that will lead to more sustainable lifestyles (Sheldon & Kasser, 2008). The lesser known definition of “responsible” means trustworthy, capable, competent, and qualified. This is the sense of the word that is consistent with the spirit of this paper. Further, this sense of “responsibility”, effectively communicated, is much more likely to resonate with people, and ultimately result in transformative individual and societal behavioral change.

#### NEGATIVE EMOTIONS

Proponents of ERB often communicate in ways that summon up negative emotions. Many believe that the best way to motivate people to change their behaviors is through fear, anger, guilt, and shame. In some ways, this approach has been effective. We tend to have a built-in susceptibility to that which is salient and available from memory. For instance, because of the prevalence of sensational media coverage of unusual events, we predict that these events occur much more frequently than they actually do (Kahneman, Slovic, & Tversky, 1982). Under this “spell”, for example, people believe that shark attacks are much more common than they are

because media coverage of shark attacks is salient and can be readily recalled from memory. These media messages arouse negative emotions, such as fear. This bias in our awareness, reinforced and perpetuated by the strong specific action tendencies associated with negative emotions, have been used to considerable effect in bringing about greater awareness of environmental collapse. “An Inconvenient Truth” (Guggenheim, 2006), for example, has been effective because its popularity has made vivid images of the impacts of global warming more available to people. With this heightened awareness, however, there is no guarantee that people will participate in more ERBs. In fact, the physical (e.g. increased cardiovascular activity) and psychological (e.g. narrowed focus toward finding the best and most convenient escape route) responses to negative emotions work counter to the establishment of the personal and societal resources that are necessary for overcoming environmental decline.

One of the fundamental problems with employing negative emotions to drive behavioral change is that they tend to narrow our attention and limit our focus to the short-term. This natural reaction to negative emotions has evolutionary value at the individual level. But under their influence we are less able to see the bigger picture, think creatively, and work collaboratively together to discover the ways through which long-term transformative change is possible, all of which are necessary for us to envision and realize a sustainable future. Worse, negative emotions, brought on by psychological threat, inspire us to increase our emphasis on extrinsic goals (e.g. financial success, attractiveness to others, and social popularity) over intrinsic goals (e.g. self-acceptance, affiliation, and community feeling) (Sheldon & Kasser, 2008). This is important because extrinsic goal orientations have been associated with both lower levels of well-being (Kasser, 2002) and lower levels of ERB (Sheldon & McGregor, 2000). Indeed, a deficit-based, fear-factor approach to environmental calamity is counter-productive.

## Mortality Salience

One particularly salient manifestation of the negative emotion of fear is the fear of death. In spite of its morbidity, psychologists have been fascinated for years about a mental construct called, “mortality salience”. It turns out that, when people are directly reminded of their mortality, their values and intentions are susceptible to change. The findings are particularly problematic for encouraging ERB because if people are scared about environmental collapse to the point that they feel their lives are in danger, they will likely behave in counterproductive ways. The perspective that we are a connected part of a much larger living system becomes weakened. Psychologists who study mortality salience describe it this way: “Viewing one’s self as distinct from the rest of nature appears to serve an important existential function, as it allows for the denial of one’s connection to nature: mortality” (Vess & Arndt, 2008, p. 1377). To those who may doubt the generality of this finding, look at how the major religions of the world view death as a passing into another, often heavenly, dimension. The knowledge that our death will lead us to a place of beauty and peace, in certain cases inspires people to believe that the Earth is doomed, and that taking any action against the inevitable is fruitless. Vess & Arndt (2008) magnificently describe how we have often dealt with our mortality:

In sum, the awesome cultural footprint resulting from our efforts to live above the wilderness is all around us in the form of breathtaking skyscrapers, power lines weaving endlessly into the distance, and the millions of lights which shine as indications of our cultural landscape when viewed from miles above the surface of the earth. The manifestation of such cultural molding is also apparent when one stops to think about the continuous development of land going on around us, whether it is a new Wal-Mart around the corner or the destruction of rain forest in South America. The roots of this

motivation appear to be driven to some extent by our need to achieve a sense of symbolic self-significance which can transcend our plight as mortal creatures (Vess & Arndt, 2008, p. 1380).

This approach to our mortality does not bode well for the health of our environment.

Many hope for a different way - not one that attempts to honor our legacy by laying waste to our living home and that of generations to come, but one where our legacy is manifest in a deep love and respect for the Earth, and honors the dedicated commitment to its sustained health. Negative emotions are important to our survival, but will not lead us to recognize and adopt such a dedicated commitment. Fortunately, there is evidence that positive emotions can undo some of the undesirable side-effects of negative emotions. It is to this undo effect that we now turn our attention.

#### The Undo Effect

Negative emotions cause strong physiological responses. These responses require large amounts of energy. In the case of fear, for example, we are primed to flee an imminent threat. This priming produces heightened cardiovascular reactivity that redistributes blood to relevant muscles, like the quadriceps. Through fear, our quadriceps is filled with blood to give it the power that allows us to escape. Although these physiological responses to negative emotions are powerful, Fredrickson and her colleagues have shown empirically that positive emotions can undo the effect of cardiovascular reactivity triggered by negative emotions (Fredrickson, Mancuso, Branigan, & Tugade, 2000). The researchers found that, when the cardiovascular reactivity of participants increased due to negative emotions brought on by telling them that they had sixty seconds to prepare a speech on “why you are a good friend”, the induced positive emotions of *amusement* and *contentment* significantly reduced the amount of time it took them to

recover from the cardiovascular reactivity. The mean cardiovascular reactivity duration under the influence of amusement was thirty-three seconds. For contentment, the mean duration was even less, twenty-eight seconds. For the neutral emotion group, it was over fifty seconds. Positive emotions allowed participants to decrease by almost half the length of their cardiovascular response to negative emotions. This is an important finding considering that stress-induced physical responses can increase the risk of the coronary heart disease. This study replicated the findings of an earlier experiment (Fredrickson & Levenson, 1998).

Induced positive emotions mediate the undoing of cardiovascular responses to negative emotions (Fredrickson, 2001). In this way, positive emotions are lessening the damaging impact of physical reactions to negative emotions, and perhaps broadening the repertoire of available responses to threatening stimuli. Environmental problems are not going away any time soon. And negative emotions in response are inevitable. Combined with the undoing effects of positive emotions, however, we may be able to lessen the detrimental effects of these negative emotions while, at the same time, increasing our ability to discover long-term solutions that benefit the entire living system. Let us now turn our attention to the critical importance of cultivating positive emotions to inspire us.

### POSITIVE EMOTIONS

We are born with wonderful talents – practically everything we need to lead a happy and flourishing life. We first give and receive *love* to attach to our caregivers. We feel *joyful*. Our caregivers feel it too. *Trust* is built. And we *hope* for more.

We are born good. Positive emotions, such as trust, joy, and love, are within each of us at birth (Vaillant, 2008). Our natural instinct is to immediately put these positive emotions to work as we attach to our primary caregiver, typically our mother (Bowlby, 1979). This instinctual

drive sets the stage for a flourishing life by increasing the likelihood that we have better relationships, higher self-esteem, less depression, and fewer psychosomatic responses to stress (Peterson & Seligman, 2004).

In an effort to motivate people to adopt more ERBs, the traditional practice has been to make people aware of the technical solutions that are available, such as composting food waste, and to convince them to adopt these solutions. This practice has a deficit-based focus and relies on solving problems. The details of the technology are explained along with the reasons why it is important to adopt such technology. Other than stirring up negative emotions such as fear, guilt, and anger, emotions are rarely used as positive motivators to inspire people to act more responsibly toward the environment.

What is needed to truly inspire us to change our consumptive behavior is a tested theoretical framework and practice that summons up the power of positive emotion, and to demonstrate experientially that ERBs do not require sacrificing well-being. This framework and practice will also need to demonstrate the power to expand our awareness, so that we clearly recognize that our actions can have profound impacts on the health of the Earth. Positivity is such a framework and practice. Positivity is the practice of bringing positive emotions to life. Fredrickson identifies ten positive emotions that form positivity; joy, gratitude, serenity, interest, hope, pride, amusement, inspiration, awe, and love (Fredrickson, 2009). Through the cultivation and practice of positive emotions we can broaden our minds and build our best futures.

#### The Broaden-and-Build Theory of Positive Emotions

Fredrickson's *broaden-and-build theory of positive emotions* (1998, 2001) has untapped potential for inspiring people to be more respectful of the environment. Her scientifically-



supported theory suggests that positive emotions broaden our perspective, vision, and *thought-action repertoires*. Fredrickson describes it best:

They (positive emotions) broaden people's ideas about possible actions, opening our awareness to a wider range of thoughts and actions than is typical....Positivity opens us. The first core truth about positive emotions is that they open our hearts and our minds, making us more receptive and more creative (Fredrickson, 2009, p. 21).

Negative emotions are known to result in specific action tendencies. For example, if we feel fear, we try to escape. If we feel sadness, we withdraw. These reactions also have a physical component. In order to improve our chances of escaping the jaws of a fearsome predator, for example, our bodies have adapted to increase blood flow to our larger muscles for greater speed and strength (Levenson, 1994). The survival value of negative emotions is immediate – the here and now. We have continually worked for millennia to construct a civilization that isolates us from powerful fears and insecurities. In large part, we have been successful at protecting ourselves from mortal danger. This is a good thing. Yet, if we choose a course predominantly inspired by negative emotions, then our focus stays narrow and our attention short term.

The survival value of positive emotions, on the other hand, is in the potential for the future (Peterson, 2006). Positive emotions are more diffuse, less salient, and seldom result from threats. So, rather than specific action tendencies, positive emotions result in the broadening of our thought-action repertoires (Fredrickson & Branigan, 2005). With a broadened repertoire we are able to pursue a wider range of thoughts and actions than would be possible from negative emotions. These broadened thoughts and actions take many forms such as, expanded visual attention, increased creativity, better performance, and more inclusive social awareness. As

positive emotions are practiced and cultivated, they work to build cognitive, psychological, social, and physical resources.

To encourage behaviors that are more consistent with a healthy environment, such as reduced levels of consumption, we need to broaden people's perspectives so that they are better able to see the life ahead once they make the behavioral changes sustainable consumption requires. Furthermore, people need to experience a building of personal resources so that these behavioral changes become sustained. Cultivated positive emotions promote learning and improve the likelihood that creative solutions will be identified and developed. As cognitive, psychological, social, and physical resources develop and build, greater well-being becomes realized, and our capacity for transformational change is increased.

The relevant point here is that, through the broaden-and-build theoretical framework, cultivated positive emotions allow us to be more cognizant of our identification with the reality that the Earth is a giant living organism of which we are a part. Negative emotions cause us to go into protection mode and induce a narrowing of our focused awareness. Positive emotion, on the other hand, "opens your mind and allows you to appreciate what is" (Fredrickson, 2009, p. 72). Let us look at some scientific evidence for why this is so.

### *Broaden*

Psychologists and other scientists have discovered a number of ways in which positive emotions lead to a broadening of our perspectives. First, let us look at how positive emotions broaden our visual attention. Wadlinger & Isaacowitz (2006) tested Fredrickson's broaden-and-build theory of positive emotions by using eye-tracking as a measure of visual attention (Wadlinger & Isaacowitz, 2006). The two studies conducted by the researchers provide strong support that people induced with a positive mood expand their attentional breadth toward

positive and neutral stimuli as compared to a control group. What this means is that when we are in a positive mood, we literally see more of the world around us – our vision is broadened, opening us up to greater possibilities.

Another study provided further evidence that positive emotions can broaden our attentional breadth. This study went one step further, however, and showed that positive emotions can improve creativity as well (Rowe, Hirsh, & Anderson, 2007). The researchers used music to inject positivity and negativity into study participants, and measured them for verbal creativity. They found that positivity increased creativity on verbal tasks. They summarized that positive emotions may help us overcome the tendency to narrowly focus our attention. An earlier experiment showed that positive emotions inspired greater creative problem solving capacity compared to negative emotions (Isen, Daubman, & Nowicki, 1987). The researchers hypothesized that positive emotions “defocus” our attention, allowing us to recognize a greater number and range of possible interpretations (p. 1130). This broadened range results in the awareness that there are more possible ways of creatively solving problems, leading to greater success in solving them.

Still further experiments support the hypothesis that positive emotion leads to improved performance and creativity. One showed that students perform better on standardized math tests when they enter the test under the influence of positive emotion (Bryan & Bryan, 1991). Another showed that physicians were better able to integrate case information about patients and avoided making pre-mature diagnoses (Isen, Rosenzweig, & Young, 1991).

Cultivated positive emotions also influence the ways in which we relate to others. For example, positive emotions eliminate an empirically validated social phenomenon known as the “own-race bias” in face recognition (Meissner & Brigham, 2001). This bias likely strongly

influences how respectful we are for other living things – in this case, humans. People recognize people of their own race better than people of other races. There are a number of explanations for why this bias exists. Because the first thing that we notice about someone else is race (even before gender), one explanation is that we unconsciously label someone by race so that we can establish an “us” or “them” position.

In a groundbreaking experiment, Johnson and Fredrickson (2005) found that the own-race bias disappeared when participants were injected with positive emotion (Johnson & Fredrickson, 2005). White participants were able to recognize the faces of blacks as easily as they were faces of whites. The researchers hypothesized that positive emotions promote either more holistic perceptual processes, or more inclusive social categorizations, or both. If the reason for the elimination of the bias is that positive emotions build more inclusive social categorizations, then it is possible that positive emotions may affect the ways in which people from differing races interact with one another. The potential exists that this heightened awareness of others may influence people’s values, attitudes, and actions. Put in an environmental context, if the relatively wealthy, predominantly white, citizens of North America perceive the blacks living in Africa as recognized individuals, then they may be more inclined to change the behaviors that either directly or indirectly threaten the Africans’ livelihoods. This outcome is supported by other experiments that have shown that positive emotions can blur the boundaries between social groups by fostering common identity (Dovidio, Gaertner, Isen, & Lowrance, 1995).

There are other ways in which positive emotions broaden our possibilities. Social psychologist, Art Aron, introduced an ingenious way of representing the quality of relationships. He and his colleagues presented experimental participants with multiple images of paired circles

– from non-overlapping pairs to nearly completely overlapping pairs. For each pair, one circle was labeled “self”, and the other was labeled “other”. They then asked the participants to select the pair of circles that best illustrated how close they felt to their most intimate partners. Aron found that relationships where the two circles were not overlapping were the least likely to last. The relationships where the two circles were most overlapping had the best chance of long-term survival (Aron, Aron, & Smollan, 1992). Fredrickson and her colleagues took the overlapping circle methodology one step further and found that a temporary boost in positive emotion allowed people to see more of an overlap between themselves and their intimate other compared to a control group. Fredrickson concludes that, “As positivity broadens your mind, it shifts your view of people and relationships, bringing them closer to your center, your heart” (Fredrickson, 2009, p. 64).

Is it possible to apply the overlapping circle methodology to discover how people view their relationship with the environment? The answer is “yes”. Schultz (2001) did just that by using a modified version of the scale developed by Aron to study how people viewed their relationship with nature (Schultz, 2001). He found that the more environmentally concerned we are, the more the circle of “self” will overlap with the circle of “nature” - greater interconnectedness between self and nature. Though these findings may be intuitive, they provide evidence that the more concerned we are about the Earth the closer our relationship with the Earth will be. Further, because positive emotions inspire more overlap between self and other, they may also inspire more overlap between self and nature, and consequently, more ERB. (For a review, see Fredrickson, 2009, Fredrickson, Cohn, Coffey, Pek & Finkel, 2008).

### *Build*

Cultivated positive emotions allow us to build cognitive, psychological, social, and physical personal resources. The *build hypothesis* of the broaden-and-build theory of positive emotions states that cultivated positive emotions, over time, build personal resources, psychological resiliency, and emotional well-being (Fredrickson, 2001). The hypothesis is empirically supported by a groundbreaking study in which loving-kindness meditation (LKM) was used to foster positive emotions. The study was a randomized, longitudinal experiment involving employees of a large computer software company. The researchers hypothesized that the participants would experience an increase in positive emotions as a result of becoming skilled at LKM over time. This increase in positive emotions would then, in turn, lead to the building of a variety of personal resources for improving mental health and overall life satisfaction (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Each of the participants was trained in LKM. The training involved six, one-hour group sessions over a period of seven weeks. Each participant reported daily on a wide number of well-being and life satisfaction measures over a period of nine weeks.

The findings of the experiment clearly show that LKM led to significant increases in a wide range of positive emotions, including awe, hope, gratitude, and love. Furthermore, increased positive emotions contributed to improvements in nine of the eighteen personal resources tested across all four domains; cognitive, psychological, social, and physical. The nine personal resources improved through LKM were, mindfulness, pathways thinking, savoring the future, environmental mastery, self-acceptance, purpose in life, social support received, positive relations with others, and reduced illness symptoms. The researchers point out that the direct effects of LKM on personal resources were virtually non-existent. The most important finding is

that positive emotion emerged as the mechanism through which valuable personal resources were improved and built. Positive emotions are “the centerpiece of the psychological cascade initiated upon learning LKM” (B. L. Fredrickson, personal communication, July 6, 2009).

Let us now take a closer look at some of the personal resource categories that were increased through the cultivated practice of positive emotions through LKM, and develop a better understanding for how those personal resources can inspire and motivate ERB. Among the cognitive resources, mindfulness has been shown to be significantly correlated with both happiness and ERB (Brown & Kasser, 2005). Mindfulness is also related more to intrinsic value orientations than extrinsic value orientations. Intrinsic values include, personal growth, relationships, and community feeling. Extrinsic values include, financial success, popularity, and image (p. 356). Mindfulness has also been shown to be associated with “emotional intelligence”, particularly with regard to having greater emotional self-knowledge (Salovey, Caruso, & Mayer, 2004). This emotional self-knowledge could, in turn, increase mindfulness, thus creating a virtuous cycle with the potential for harnessing specific emotions like awe and hope toward greater awareness of oneness with the Earth.

Also a cognitive resource, the term “pathways thinking” comes from *hope theory*, and refers to a person’s belief that there are multiple ways to achieve a goal. Our current environmental problems are going to require open-mindedness, creativity, and a lot of hope to be solved. To the extent that positive emotions encourage more pathways thinking, there is greater likelihood that people will identify the ways in which our behaviors need to change, and have the wherewithall to make those changes.

The psychological resource of environmental mastery relates to the concept of self-efficacy; the belief that we can perform the behavior that produces the desired outcome

(Maddux, 2002). Self-efficacy allows us to believe that we have the capacity to follow our hearts to accomplish what we set out to accomplish. This is important because, again, the environmental problems that we currently face are vast, and require resilience and the belief that changing our behaviors can and will make a difference. In light of the finding that a psychological threat, and the resultant negative emotions, can lead to more extrinsic goal striving (Sheldon & Kasser, 2008), having greater resilience will help overcome tendencies to summon up negative emotions in response to the destructive impacts of environmental decline.

With regard to the social resources that benefit from cultivated positive emotions, positive relations with others are important to inspiring ERB. It is critical for humans to be positively associated with others if they expect to live a flourishing life (Peterson, 2006). But beyond that, the sense of community that is established through positive relations with others is necessary for behavioral changes to be made on a grand scale. A recent study found, for example, that social norms are much more influential in inspiring ERB than people think they are. Social normative information inspired people to conserve more energy than standard appeals used to influence ERB, such as protecting the environment, being socially responsible, and saving money (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008, p. 921). Social norms require substantive cultural change to be influential. The extent to which like-minded individuals are connected, therefore, is critical to advancing the cultural transformation that is required for wholesale behavioral change at the societal level. Furthermore, because of the interconnectivity of the world, solutions to environmental problems are often global. Behaviors at the individual, community, and societal level can impact people in distant lands (O'Brien, 2008). Without positive relations in general, people will not be willing or able to identify with the reality that the sustainability of every living thing is contingent upon mutual success.



In the LKM experiment, the building effect not only improved the participant's well-being, but by incorporating a meditation practice that was active, personalized, and involved mindful attention, it also ameliorated the impact of the "hedonic treadmill". The idea of the hedonic treadmill was first coined in the early 1970s (Brickman & Campbell, 1971), and is so substantiated by empirical findings that it is often treated by psychologists today as a known fact. The hedonic treadmill, to which we are all vulnerable, basically describes an innate force that may be the product of the evolutionary success of our ancestors (Ben-Shahar, 2007). It describes the process through which each of us adapts to things and experiences by taking them for granted over time. As accomplishments and acquisitions increase, expectations rise. Once they have been realized, they no longer make us feel happy, and we continue to pursue more. This cycle continues on and on resulting in the sense that we are not able to ever reach our material or experiential goals (Seligman, 2002). Unfortunately, this constant striving can result in problems with stress, self-esteem, and in many cases, can lead to decreased physical health (Kasser, 2002).

We have certainly witnessed the ludicrous levels of consumption that were likely inspired by the hedonic treadmill – the more we have, the more we want. We can now see how terribly important it is that positive emotions cultivated through LKM were able to ameliorate its impacts. This suggests that adaptation may not be as inevitable as once thought, particularly as it relates to positive emotion. This is consistent with other research that shows that we habituate more rapidly to material items than we do to experiences (Van Boven & Gilovich, 2003). We know that we eventually adapt to most negative events. This is a good thing and allows us to get beyond the downsides of life, such as the death of a loved one. If we can also reduce, or possibly eliminate, adaptation to positive events, there is much greater potential for our overall well-

being. And, to the extent that this potential greater well-being is not held at bay by severe environmental impacts, sustained human flourishing is conceivable.

### Meditation

Before examining some specific positive emotions to see how they can inspire ERB, it is valuable to look at the contributions of meditation and the contemplative traditions to positive emotions, well-being, and ERB. As we saw from Fredrickson et al's (2008) work with LKM, meditation can be used to cultivate positive emotions to build cognitive, psychological, social, and physical resources. It can also shift our perspectives about others by increasing empathy and compassion (Shapiro, Schwartz, & Santerre, 2002). This is an important outcome because research has shown that people who have been induced with empathy for the natural environment show significantly higher concern for nature than people in a control condition (Schultz, 2000). Weinberger et al (1990) found that meditational practice led to an increase in *oneness motivation*, which is characterized as being positively affiliated with something larger than oneself – part of a larger whole (Weinberger, McLeod, McClelland, Santorelli, & Kabat-Zinn, 1990). Clearly, this outcome is consistent with a caring orientation toward the Earth. All of these beneficial outcomes of mediation show that it is highly possible for positive emotions, cultivated through meditational practice, to lead to both greater personal resources and greater ERB.

Of the ten positive emotions identified by Fredrickson (Fredrickson, 2009), four are particularly relevant to pro-environmental inspiration; awe, hope, gratitude, and love. Let us now draw our attention to these four emotions and see how their application through the broaden-and-build hypothesis can stimulate ERBs.

## Awe

*The most beautiful emotion we can experience is the mysterious. It is the power of all true art and science. He to whom this emotion is a stranger, who can no longer pause to wonder and stand rapt in awe, is as good as dead - Albert Einstein.*

Awe is a self-transcendent emotion. It can take several forms. People feel awe for human achievement and excellence. People feel awe when they witness catastrophic events, such as hurricanes, wars, and terrorist attacks. People feel awe for nature, such as when they experience the Grand Canyon, the giant redwoods, or the delectable beauty of a wild flower. In all of these forms, the emotion of awe brings with it the sense that there is something out there that is much greater than we are. We feel small and humbled. Yet, we also feel elevated as if we have been witness to something beyond the ordinary. Awe-inspiring events can be life-changing and remembered for life (Keltner & Haidt, 2003).

Though it has received substantive treatment in religious and philosophical literature and tradition, awe has not been the subject of many scientific experiments. This is particularly curious given the impact that awe can have on human values and actions. Sociological literature, for example, is full of the societal and cultural impacts that a charismatic leader can have through the emotion of awe as felt by his or her subjects. The perceived greatness of the awesome leader leads to behaviors that can collectively transform societies and cultures. For a counterproductive example, look at the rise of The Third Reich because of the awesome power and charisma blatantly exhibited by Adolf Hitler. Martin Luther King and Mohandas Gandhi are more positive examples.

The large group transformations brought about partially through the emotion of awe are possible because of transformations that occur at the individual level. According to psychologists

who have studied awe, “Given the stability of personality and values, awe-inducing events may be one of the fastest and most powerful methods of personal change and growth” (Keltner & Haidt, 2003, p. 312).

An experience of awe can result from power (either human or through an “act of God”), nature, art and artifact (e.g. a DaVinci painting or the Great Pyramids of Egypt), epiphanic events, and religious experiences. Keltner and Haidt (2003) argue that a truly awesome experience must include both vastness and accommodation (Keltner & Haidt, 2003). Vastness refers to experiences that result from witnessing and internalizing things that are much larger than ourselves. Vastness can apply to things that are physically large, such as the Grand Canyon, but can also apply to social manifestations, such as political power or fame. Accommodation refers to an emotional experience that challenges our existing understanding of how the world works. Experiences of awe that are successfully accommodated expand our consciousness by integrating truth that heretofore was unknown to us. In this way our knowledge structures are altered and we become enlightened (Keltner & Haidt, 2003).

Clearly, feelings of awe play into the sense of oneness that is necessary to instill in humanity if we are going to be willing and able to change our consumption behaviors to be more environmentally responsible. With respect to awe, sensations resulting from the vastness of nature hold the most promise for harnessing our admiration and respect. If the experience also results in the accommodation of some greater meaning, it is more likely to transform us to the extent that our behaviors are permanently changed for the better.

It is no mystery that the rampant individualism in Western culture poses a challenge to ERB. As we will see later in this paper, people who are more self-centered and extrinsically motivated are more inclined to take more than their fair share of resources. A recent study that

looked at how awe influences the concept of self is hopeful. The researchers found that awe is not elicited by the opportunity for material reward. They also found that the awe-prone participants were more comfortable revising their mental representations of the world. Finally, the results led the scientists to conclude that awe has “an impact on the content of the self-concept, increasing one’s sense of the self as part of a greater whole - a self-concept that de-emphasizes the individual self” (Shiota, Keltner, & Mossman, 2007, p. 960).

Another experiment looked at value orientations associated with environmental concern. This experiment measured the value orientation of each of the 1005 participants prior to the experiment, and compared the results of an environmental concern survey with their base, pre-survey value orientation. Schultz (2001) found that people who have *egoistically* oriented values (i.e. concern for self over other people and the environment) are positively associated with self-enhancement and negatively associated with self-transcendence. In contrast, people who have *biospheric* oriented values (i.e. concern for all living things) are negatively associated with self-enhancement and positively associated with self-transcendence concerns (Schultz, 2001). An interesting and valuable future experiment would be to first, induce participants with the positive emotion of awe, and then survey them to determine if awe increased self-transcendence and biospheric values. It is plausible that the cultivation of awe makes people more likely to seek self-transcendence over self-enhancement, and more likely to possess a biospheric orientation over an egoistic one.

Based on these findings, it is possible to conclude that, through the purposeful practice of the positive emotion of awe, we can elicit potentially transformative personal self-concepts that place us squarely in the informed position that we are all part of one great living organism, and that our actions can have a positive impact on its health and longevity. This belief that we are

intimately connected to all life will likely alter our habits and behaviors to be more caring of the Earth. We can then see that it is possible to get beyond hurting the living system of which we are a part to actually helping and healing it.

### Hope

*Not only is another world possible, she is on her way. On a quiet day, I can hear her breathing – Arundhati Roy.*

Hope is a positive emotion that is manifest because of our mental ability to envision our future. Without it, our future visions would be dominated by potential pitfalls and disasters. We would be relegated to living in fear and acting in ways strictly to preserve ourselves. Negative emotions cause us to narrow our focus, both in terms of space and time. Like all positive emotions, hope is necessary for us to overcome the powerful negativity bias that exists in our psyches (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Hope inspires us to set goals and achieve them despite all of the dangers that exist in our environment. The cultivation and practice of hope can expand our abilities to see beyond immediate dangers to what is possible for our long-term flourishing. According to George Vaillant (2008), “Hope reflects our ability to imagine a realistic positive future” (p. 104).

Scientists have discovered that hope can be a powerful moderator between materialism and, ethical and socially responsible behavior (Giacalone, Jurkiewicz, & Deckop, 2008). They found that high levels of hope may help facilitate more ethical and socially desirable values. This is an important finding because it suggests that the diligent practice of the positive emotion of hope may increase the likelihood that people will act in more pro-social and environmental ways. This finding is of further importance because it suggests that hope may inspire materialistic

individuals to become less so. People with highly materialistic values report lower levels of physical health, psychological health, and well-being (Kasser, 2002).

Hope is a complex emotion that involves both a feeling and a sense of forward motion and action. Hope inspires the belief that change is possible – the emotion of hope leads to thinking about how to build a better future. *Hope theory* emphasizes goal setting, developing strategies for reaching goals (i.e. pathways thinking), and initiating and sustaining the motivation necessary for applying the strategies (i.e. agency thinking) (Lopez, et al., 2004). Using hope theory people develop a language of hope that is goal-directed. The emphasis is on practical application through engagement in productive tasks.

The action-orientation of hope may shed light on the reason why materialism is negatively correlated with well-being. The results of a recent study by Kashdan and Breen (2007) showed experiential avoidance as a mediating mechanism between materialism and lower levels of well-being (Kashdan & Breen, 2007). Experiential avoidance is defined as, “the unwillingness to be in contact with negatively evaluated thoughts, feelings, and bodily sensations and strategic attempts to alter the form, frequency, or situations that elicit these experiences even when this struggle causes harm” (p. 523). In effect, this avoidance behavior results in a depletion of self-regulation (this will be covered later in this paper) and energy and leads to a passive lifestyle, even if the movement is toward personally meaningful goals. This finding is particularly alarming because it suggests that, as climate change becomes exacerbated, and environmental problems multiply, people may become more experientially avoidant. This could lead to higher levels of materialism and a vicious downward spiral in terms of both environmental health and human well-being. Another related study designed to understand more about the pursuit of happiness found that people who devoted financial resources to life

experiences, such as family vacations, reported being happier than people who devoted their money to material purchases (Van Boven, 2005).

Is it possible that materialism, and the over-consumption behaviors associated with it, is the result of hopelessness? More research will need to be done to support the affirmative answer to this question. Even so, based on what we know now, hope is a powerful emotion for encouraging value shifts away from a lifestyle based on acquisitiveness and toward a lifestyle that actively seeks to maximize experiences, and ethical and social responsibility.

### Gratitude

*Gratitude unlocks the fullness of life. It turns what we have into enough, and more. It turns denial into acceptance, chaos into order, and confusion into clarity. It turns problems into gifts, failures into success, the unexpected into perfect timing, and mistakes into important events. Gratitude makes sense of our past, brings peace for today and creates a vision for tomorrow – Melodie Beattie.*

As an emotion, gratitude requires that we experience something positive – that something good has happened to us, and that there is some external source for this positive experience. It further requires that we have some awareness that something good has come our way. Because gratitude typically requires that we acknowledge some external source, it tends to be a pro-social emotion that helps us establish and build social capital, in terms of social bonding, reciprocity, and support. A study by Algoe, Haidt & Gable (2008) was the first to show evidence that the emotion of gratitude is associated with relationship formation (Algoe, Haidt, & Gable, 2008). As such, gratitude does more than just encourage and strengthen reciprocity between people. It also serves to establish and promote long-term relationships that help us when the going gets tough, and support us when times are good. This fits nicely with Fredrickson's broaden-and-build



theory of positive emotions because gratitude also broadens people's thought-action repertoires by prompting them, "to stretch themselves to think creatively about how to repay kindness" (Fredrickson, 2004, p. 152). Through the broadened thought-action repertoires that gratitude motivate we are able to creatively initiate and repay kindnesses in multiple domains of our lives. Intimate, loving personal relationships can be improved. Friendships can be cultivated. Community connections can be made. And spiritual practices can be transformed.

Positive psychology is the scientific study of human flourishing, with the ultimate goal of improving it. As previously described, this scientific discipline encompasses positive emotions, engagement, and meaning. In order to achieve its goal, which Martin E. P. Seligman, the founder of positive psychology, calls "increasing the tonnage of happiness in the world"; practitioners within the field must employ positive interventions. Before examining two of the most effective positive interventions, both of which involve the emotion of gratitude, we first need to understand what characteristics make up an effective positive intervention.

Like interventions in traditional psychology, effective positive interventions can take many forms. Effective positive interventions possess several distinct but related characteristics. First, they possess agency - a means of exerting power or influence. This agency can be external, internal, or both. In cases where there are both types of agency, the proper balance between the two is critical. Second, positive interventions are context and person (or group) specific. They must be applied after careful and thoughtful consideration of the targeted individual (or group) and the domain (e.g. work, marriage, and parenting) within which the intervention is intended to work. Third, they must be empirically supported. Scientific evidence must exist, which shows that the identified intervention leads to improved well-being. This is important because what separates positive psychology from self-help is good science. Finally, they are action-oriented.

Therefore, an effective positive intervention is defined as a process that involves agency (internal, external or both), is context/person specific, is supported by scientific evidence, and is action-oriented (J. O. Pawelski, personal communication, October 24, 2008).

Two such empirically tested positive interventions are the *gratitude visit*, and *three good things in life*. Both interventions cast the positive emotion of gratitude as the central character. Through the *gratitude visit*, people write a letter of gratitude to someone who has been especially kind to them and deliver the letter in person. The recipient is asked by the writer to read the letter in his/her presence. The *three good things in life* intervention entails writing down every day, for some established time period, three things that went well that day, and to include the reason(s) for why each thing went well. Experimental participants who performed the *gratitude visit* reported being significantly happier and less depressed than control group participants. This intervention showed the largest positive effect of the five positive interventions studied, with the happiness peak taking place within the first week after the visit (Seligman, Steen, Park, & Peterson, 2005). Similarly, participants who performed the *three good things in life* exercise reported being significantly happier and less depressed than control group participants. With this intervention, however, the effect was much longer lasting, as participants reporting being significantly happier and less depressed after six months. In another, unrelated study, participants randomly assigned to the gratitude group, which performed daily self-guided gratitude exercises, experienced heightened positive emotion. They also exhibited more pro-social motivation by being more inclined to help others with personal problems and offering higher levels of emotional support (Emmons & McCullough, 2003).

It is important to point out that positive interventions exist to assist in the cultivation of many positive emotions, not just gratitude. This section on gratitude was used to define positive

interventions because two of the most effective ones involve this powerful emotion. Positive interventions also exist to increase love, joy, pride, awe, hope, amusement, and serenity.

There is little, if any, direct empirical evidence that shows heightened gratitude leading to ERB. So, how can we know if cultivating gratitude can make a difference? We do know that gratitude broadens our thought-action repertoires, allowing us to see more of what is real, experience more deeply, and be more adaptable and creative. We also know that expressing gratitude can increase our well-being. Furthermore, to the extent that gratitude connects us with other humans and other living things, there is greater potential for people to feel respect for the living system within which we live and love. Gratitude produces “a cascade of beneficial social outcomes, because it reflects, motivates, and reinforces moral social actions in both the giver and recipient of help” (Fredrickson, 2004, p. 158). It is inarguable that slowing down and reversing environmental degradation and collapse is a moral imperative. Gratitude is one of the positive emotions that can guide us to a caring and moral space where there is a good chance that we will be inspired and motivated to change our individual consumption behaviors to be more respectful of the Earth.

### Love

*Love is anterior to life, posterior to death, initial of Creation, and  
the exponent of Earth - Emily Dickinson.*

Much has been written about love. Love is a powerful emotion that can inspire us to take action. Of course, love is often described as a verb. Some argue that love is not true unless it is put into practice – it is more than just a feeling (Peck, 1978). Intuitively, we know that love is both a feeling and a way of interacting in the world. Love is the positive emotion that comes to mind when we examine intimate relationships and the attachments that result. Positive

psychology has demonstrated through countless studies that intimate relationships are a cornerstone of happiness and human flourishing. Seligman (2002) describes many examples of the benefits that we and our intimate others accrue through loving, long term relationships (Seligman, 2002). The experience of love literally transforms our brain by shaping it through attachment to a beloved other (Vaillant, 2008). In this way, through love we assimilate our intimate others – they become a part of us, and we a part of them. This assimilation is mutual, positive, and permanent.

*Attachment theory* in psychology shows how positive emotions set the stage for a flourishing life. A primary reason for why this is so is because of the effects of oxytocin. Known as the “cuddle hormone”, oxytocin has been linked to the creation of a loving bond between two people that can lead to lifelong bonding, trust, and intimacy (Peterson, 2006). Beyond the effects of oxytocin, children who are raised to be securely attached are more likely to function better socially when they are adults. They also tend to elicit more positive responses from others, thus increasing the likelihood that they will find and enter into loving relationships. Most importantly, psychologists believe that the human attachment system operates throughout the lifespan (Bowlby, 1979).

Attachment and the positive emotion of love go hand in hand. The effect of each upon the other is synergistic. They are primal in the sense that they are innate and influential. Children are born with the innate capacity to give and receive love, and attach to their caregivers. Giving love brings joy, builds trust, inspires gratitude, and brings us hope for the future. Peterson & Seligman (2004) describe the character strength of having the capacity to give and receive love as being bounded to early attachment in life (Peterson & Seligman, 2004). Though secure attachment during early childhood is not an absolute prerequisite to the capacity to give and receive love,

based on the large body of research in attachment theory it is no doubt a significant contributing factor.

Our survival lies in the collective awareness that all life is one community. And attachment through the expression of love may end up being one of the fundamental drivers for bringing people together to overcome environment collapse. People have different goals and expectations, but loving attachment is one thing that most everyone has in common. Attachment between human and “Mother Earth” can also be employed as an effective metaphor for inspiring people to be more respectful of living systems, and to reduce their levels of consumption. For example, Fredrickson (2009) describes her personal experience at a meditation retreat: “That week I came to believe that oneness isn’t merely a perception. It’s what is. Positivity opens your mind and allows you to appreciate what is” (Fredrickson, 2009, p. 72).

## HUMAN MOTIVATION

We have looked at the limitations of negative emotions as motivators of ERB. We have also unpacked the broaden-and-build theory of positive emotions. And, we have looked at how four specific positive emotions set the stage for greater openness, awareness, and action. Now, let us turn our attention to human motivation, specifically Self-Determination Theory (SDT) and its complement, self-regulation. Following that, we will look closely at how SDT and ERB are related. Finally, we will come back to positive emotions and look at how they, combined with intrinsic motivation, can inspire ESBs, by informing our value systems, powering our intentions, and inspiring our actions.

### Self-Determination Theory

Self-Determination Theory (SDT) is a leading psychological theory that addresses optimal human motivation. It tells us that those who are more intrinsically-motivated exhibit

higher levels of autonomy, competence, and relatedness – all of which are important to well-being. “Autonomously motivated behavior is self-endorsed, volitional, and done willingly; that is, it is self-determined. In contrast, behavior that lacks autonomy is motivated by real or perceived controls, restrictions, and pressures, arising either from social contextual or internal forces” (Brown & Ryan, 2004, p. 105). Since negative emotions cause reactions that are primarily initiated by external psychological or physical threats, SDT would argue that these motivators are counterproductive to well-being. Self-determined behavior, on the other hand, encompasses positive emotions and leads to greater well-being and life satisfaction. To truly understand SDT it is essential to understand the concepts of intrinsic and extrinsic motivation, particularly since SDT promotes intrinsic motivation as the “gold standard” of autonomy, self-regulation, and well-being (p. 107). Intrinsic motivation is in use when someone is engaging in an activity with no reward other than the activity itself. One example would be getting lost in a good book. On the other hand, people engage in extrinsically motivated activities in order to realize some other end, such as praise from a parent or supervisor.

Intrinsic motivation leads to both enhanced task performance and higher levels of well-being (Csikszentmihalyi, 1990). And people who participate in more intrinsically motivated activities have higher emotional well-being. To support this, SDT researchers tested whether or not daily variations in emotional well-being may be understood in terms of the degree to which autonomy, competence, and relatedness are satisfied in daily activity (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). The researchers found that higher levels of autonomy and competence in daily events were associated with more favorable outcomes on all four of the well-being measures they tested; a measure of positive emotion, a measure of negative emotion (reverse

scored), a measure of the degree to which participants felt physically and mentally vigorous and alert, and a measure of physical illness symptoms (reverse scored).

Even though a growing body of work is showing a powerful connection between intrinsically-motivated behavior and well-being, extrinsic motivations are a fact of life. SDT illustrates four distinct types of extrinsic motivation falling on a continuum from nonautonomous to autonomous. The most nonautonomous type of extrinsic motivation is called *external regulation*. It is compliance based, externally caused, and follows an external rewards and punishments process. This type of motivation lacks an intrinsic element and typically will have a negative impact on well-being. An example of this type of motivation is when someone performs work for the sole reason of collecting a paycheck. The second most nonautonomous type of extrinsic motivation is called *introjected regulation*. It is somewhat externally caused, based on ego-involvement, and follows an internal rewards and punishment process. With this type, “a person behaves to attain ego rewards such as pride or to avoid guilt, anxiety, or disapproval from self or others” (Brown & Ryan, 2004, p. 107). An example of this type of motivation is someone who works hard to have the nicest garden on the block so that they can feel pride about how favorably the garden compares with those of the neighbors. The third, and second most autonomous, type of extrinsic motivation is called *identified regulation*. It is somewhat internally caused, based on personal importance, and follows a conscious valuing process. An example of this type is someone who exercises regularly because they value the good health that can result from it. The healthful benefits of the exercise are valued, but the exercise itself is not necessarily enjoyable to do. The most autonomous type of extrinsic motivation is called *integrated regulation*. It is internally caused, based on congruence and awareness, and follows a synthesis with self process. An example of this type is volunteering at a homeless shelter on a regular

basis. The activity is consistent with certain values, is meaningful, and is consciously integrated into the concept of self. This type of extrinsic motivation is the most like intrinsic motivation, but differs in an important way. While both are volitional and meaningful, intrinsic motivation is inspired by our authentic interest, whereas integrated regulation is inspired our valuing of the behavior (Moller, Ryan, & Deci, 2006).

In life, we are continuously taking actions that are inspired by intrinsic motivation, extrinsic motivation, or both. These actions can be consciously or unconsciously motivated. Often times, we are working to balance internal causes of motivation with external causes of motivation. There are enormous social pressures in society that often lead to extrinsically motivated behavior. We want to be popular. We want to be successful, financially and otherwise. We want to be accepted by the social groups with which we identify most. With many of the behaviors undertaken to meet these ends, we are motivated by others. In some cases we are allowing ourselves to be controlled (i.e. external regulation). In others, we are behaving willingly in ways that are self-actualizing (i.e. integrated regulation). Either way, there is some other outside force that is causing us to act – we are seeking some sort of acceptance, either from ourselves or others. And, our sense of well-being may be at risk if we become too motivated by outside influences.

We also act in intrinsically-motivated ways. When we do, we are acting out of personal interest. The behavior feels good. It feels right. Our well-being is maximized when we behave in these ways. The societal pressures we face sometimes make it difficult to seek out and participate in intrinsically-motivated activities. Even so, it is important for us to stay balanced. If we get out of balance, and end up becoming overly extrinsically motivated (as in the case of materialism), we run the risk that our sense of well-being will be in serious jeopardy.



## Self-Regulation

Self-regulation is an important complement to self-determined motivation and behavior. It is especially important when it comes to making sure that we do not become too habituated to extrinsic motivation, particularly those types that are the least autonomous. “Self-regulation is a highly adaptive, distinctively human trait that enables people to override and alter responses” (Baumeister, Gailliot, DeWall, & Oaten, 2006). Not only do people with high levels of self-regulation tend to be more successful in life, but they are also able to use their self-regulation to mitigate the effects of ego depletion. In a state of ego depletion, we are less likely to stay on task and reach the goals we set out to reach. Self-regulation acts as a muscle that becomes depleted as it is used. Recent evidence shows that regular exercise of self-regulation can improve self-regulation, just like strengthening a muscle (Baumeister, Gailliot, DeWall, & Oaten, 2006).

Self-regulation is important when it comes to staying on track with regard to our intrinsic motivations. In a state of ego depletion, we are vulnerable to “falling off the wagon” of intrinsic motivation, and being tempted by the abundant extrinsic motivators in society. Avoiding this vulnerability is absolutely critical because SDT research shows that extrinsic rewards actively weaken intrinsic motivation. Through increased extrinsic motivation, “behavior becomes reward dependent, and any intrinsic motivation that might have been manifest is undermined” (Brown & Ryan, 2004, p. 110). In other words, without self-regulation our extrinsic motivations will loom large, and it may become difficult for us to maintain a meaningful connection with those activities that we find to be the most rewarding. We can lose our way. The acquisitiveness associated with extrinsic motivations has caused an epidemic of conspicuous consumption (Schor, 1998). This epidemic is a major reason for the environmental crises we currently face (Myers & Kent, 2004).

### Self Determination Theory and Environmentally Responsible Behavior

Let us now take a look at what SDT has to say about ERB, and more specifically, how intrinsic motivation can inspire it. In a clever experiment, Sheldon and McGregor (2000) looked at whether or not value orientations would impact how quickly a limited resource (in this case, a forest) would be depleted (Sheldon & McGregor, 2000). They found that the group of participants who had high extrinsic value orientations (EVO) exhausted the limited resource much faster than those participants who had high intrinsic value orientations (IVO). As a result, because a forest has the capacity to gradually replenish itself, the high IVO group ended up with a greater number of resources in the long run. More specifically, high IVO groups preserved the forest for nearly twenty years, while the high EVO groups' forest lasted only fifteen years.

Surprisingly, Sheldon and McGregor found that when the two groups were mixed together, the high IVO participants had more influence on the outcome than the high EVO participants. The mixed groups' forest lasted almost eighteen years. The researchers speculated that, in times of resource scarcity, such as the one we find ourselves in today, people with high intrinsic value orientations may have an evolutionary advantage. This study suggests that people with high extrinsic value orientations are not only subject to lower levels of well-being, but are, perhaps ironically, subject to lower economic benefit as well.

In another study, researchers looked at whether or not people with greater *internalized motivation* (i.e. intrinsic motivation and identified regulation) would be more likely to achieve environmental goals that they established for themselves (Osbaldiston & Sheldon, 2003). The psychologists tested a pathway model that integrated four elements (steps) thought to promote ERB. The first element of the model is the participant's perceived supportiveness of the experimenters. The second element represents internalized motivation. The third element relates

to successful goal performance and self-efficacy. The fourth element, and last step in the process, is future intentions to act.

The results of the study support the notion that internalized (self-determined) motivation, within a supportive environment, and combined with self-efficacy in terms of personally established goals, “can promote sustained environmental behavior change” (p. 355). Furthermore, the self-determined participants “seemed to enter an upward spiral of positive change, in that they were more likely to perform well, which in turn tended to promote intentions to keep behaving after the study’s conclusion” (p. 355).

We know that intrinsically motivated behavior leads to greater well-being. There is also mounting evidence that people who live a lifestyle more respectful of the environment have higher levels of well-being than those who do not. For example, Brown and Kasser (2005) looked at the relationship between subjective well-being (SWB) and ERB (Brown & Kasser, 2005). Their research found that these two measures were significantly positively related. They also looked at whether or not SWB and ERB were associated with intrinsic value orientations, greater mindfulness, and a voluntary-simplicity lifestyle. They found that these elements were indeed positively associated. Evidence from an earlier study also showed that people who adopt and adhere to extrinsic goals, such as financial success, popularity, and image, are less satisfied with their lives than people who have a more intrinsic goal-orientation (Kasser & Ryan, 1996). The main point of this convincing evidence is that, in addition to the pressures put on the environment, greater levels of consumption associated with extrinsically-motivated goals is detrimental to well-being. And a focus on the intrinsically rewarding aspects of life such as, a sense of community, physical health, and self-acceptance is not only more rewarding, but it can also lead to ways of living that put considerably less pressure on the Earth’s limited resources.

## THE BEGINNINGS OF A COMPREHENSIVE THEORY

How do positive emotions motivate humans to be more environmentally responsible?

That is the key question this paper attempts to answer. Before we can properly put the pieces together, it is important to first look at how deeply-felt emotions unconsciously drive our judgments and decisions.

### The Affect Heuristic

Heuristics are simple, efficient rules, hard-coded by evolutionary processes or learned, which have been proposed to explain how we make decisions, come to judgments, solve problems, and ultimately, take action. We are generally unaware that heuristics are functioning in our unconscious, constantly influencing our thinking and acting. Scientists have discovered that emotions influence the ways in which heuristics are developed and applied. Noble Prize winning psychologist, Daniel Kahneman, wrote: “The idea of an affect heuristic is probably the most important development in the study of judgment heuristics in the past few decades” (Kahneman, 2003, p.710). The affect heuristic is an emotion-based response to a stimulus – it is a non-deliberative rule of thumb, or “gut” feeling, that influences judgments and decisions. The affect heuristic is a very important piece of the puzzle because it leads to a natural, and often times, unconscious emotional assessment of each situation in life. This assessment motivates our behavior. Kahneman argues that automatic emotional valuation is the main determinant of many of our judgments and behaviors.

Tapping into the power of our emotional unconscious, and improving our understanding of how it works, can pay dividends in the search for what encourages or discourages ERB. If we always perceive the world as a dangerous place, then our thinking and actions will be influenced predominantly by negative emotions. In such a state, we have a narrow-focus, and are unable to

see the big picture. Heuristics may be mostly unconscious. But by placing positive emotions more squarely in our consciousness, we can alter, and potentially short-circuit, emotional reactions to stimuli that are negative in nature. Because the experience of awe, for example, can effect profound changes in us, it could potentially alter our affect heuristic in such a way that our “gut” response to environmental degradation may evoke changes in our values, intentions, and actions. On the other hand, over-consumption may be simply motivated by unconscious negative emotions that cause us to be self-focused. This may have been a useful instinct to our ancestors who lived a hunter and gatherer existence. However, in times of relative abundance, these evolutionary instincts are often counter-productive; resulting in levels of consumption well in excess of what is required to meet basic needs.

#### Independent Functional Systems

To further set the stage for how positive emotions inspire ERBs, we must recognize that positive and negative processes are most likely functionally independent, not opposites along the same continuum (Reis & Gable, 2003). Interestingly, this is also a fundamental tenet of positive psychology – people who become less depressed are not necessarily happier, and people who become happier are not necessarily less depressed (Seligman, 2002). Like the affect heuristic, this is a very important aspect of our understanding. With two separate functional systems, our approach to positive emotions is very different from our approach to negative emotions. The negative dimension is called the “aversive system”, and relates to the goal-directed *avoidance* of undesirable outcomes. The “appetitive system” functions in the positive dimension, and relates to the goal-directed *pursuit* of desirable outcomes. Because both systems are theorized to be functionally independent, the operation of either system is uninformative about the other. Although negative events occur less frequently than positive events, they are more or less

inevitable. So our responses to them become intuitive and salient. Positive events may be more frequent, but they are more diffuse and less salient. As a result, they “often must be sought out, mandating that initiation plays a significant role in determining when opportunities are perceived, pursued, and capitalized on” (Reis & Gable, 2003, p. 142).

Emotional and cognitive processes work together to influence the decisions and choices that ultimately lead to actions. But, if the affect heuristic is as deeply a part of us as psychologists believe it to be, then it is logical that emotions motivate us to take action as much as, or more than, any cognitive process. Furthermore, if the positive and negative functional systems are independent, with each being uninformative about the other, then the *actions* that result from our positive emotions will be fundamentally different from the *reactions* motivated by negative emotions.

The valence of our emotional state (i.e. positive or negative) will influence our intentions and actions. If a negative emotion, such as fear, becomes aroused by a stimulus, our response will be more reactive and narrowly focused – we will likely be looking for ways to escape. If, on the other hand, a positive emotion is aroused, our response will be more proactive and broadly focused. In this case, a greater range of potential actions will follow. As we have seen, negative events are inevitable, and our aversive system is astute at responding to stimuli that require negative emotions to initiate the proper response (Reis & Gable, 2003). After nearly two million years of hunter and gatherer experience in our successfully-adapted genes, we have become quite skilled in this dimension. Positive events, on the other hand, are not as inevitable (nor as salient from a survivability standpoint) and must be persistently pursued to become realized.

What this tells us is that positive emotions are at somewhat of a disadvantage. The heuristics and responses that we have developed relative to negative emotions come to us more

naturally. In fact, a negativity bias exists that leads us to perceive bad as stronger than good (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Like the dominant arm of a seasoned professional tennis player, our negative-emotion response mechanism is much stronger. It is no wonder that the prevailing approach to environment degradation over the past fifty years has been to use fear, guilt, anger, and shame to inspire behavioral change. The problem with this approach, however, is that our negative response mechanism is tuned to immediate danger – (Lazarus, 1991). This approach may work better for people with a biospheric value orientation – it is relatively easy to identify some other organism or person that is under immediate environmental threat. But, for many of us with dominant or powerful egoistic values (especially in highly individualistic societies), environmental degradation has not yet resulted in any immediate threat to our existence. So, inspired by negative emotions, our attitudes and behaviors are unlikely to change any time soon.

### The Positivity Ratio

Our balance of positive to negative emotions determines how we see and interact with the world. Fredrickson has discovered that, if, over time, we experience a positive to negative emotion ratio that is less than 3:1, chances are we are susceptible to tunnel vision and narrowly focused thinking. We see threats as more prominent than opportunities and act accordingly. We are less likely to see and experience the benefits to ourselves and others of living more sustainably. The majority of people have a positivity ratio of about 2:1. With a positivity ratio of 3:1 or higher, we are setting ourselves up for flourishing and a much larger capacity for potential actions and outcomes (Fredrickson, 2009). As we have seen, however, because positive events are less salient than negative events, they often must be actively sought out (Reis & Gable, 2003). The purposeful cultivation of positive emotions is required for us to overcome our natural

negativity bias and gain momentum toward a steady state of intrinsically-motivated positive actions.

Unfortunately, not a great deal of research has been done to measure how emotions affect, and relate to, ERB. Most of the work that has been done has focused on negative emotions, and how they can influence attitudes and behaviors. A very recent study looked specifically at the connection between emotions (both positive and negative) and ERB among other measures, one of which was environmental identity. Not surprisingly, the researchers found, “that the more one has an affective (emotional) connection with the natural environment, the greater one’s intentions to engage with it” (Hinds & Sparks, 2008, p. 115). What was surprising, however, was that the affective connection was so potent to the motivation of ERB that environmental identity was not a significant predictor of ERB without it. What this suggests is that, when they found a connection between environmental values and behaviors, the active ingredient was emotion. This finding is complementary to other psychological research that found that benefit finding (i.e. finding the good from a traumatic life event, such as raising a child with autism) resulted in lower levels of stress hormone only when it was associated with authentic, heartfelt positive emotion (Moskowitz & Epel, 2006). Put another way, without intrinsically-motivated positive emotions, the participants of the study could not reduce their physical stress levels no matter how much they perceived ultimately benefiting from a stressful or traumatic life event. Future work to more deeply analyze the impacts of positive emotion on ERB is certainly called for.

The evidence cited in this paper demonstrates that there is a relationship between intrinsic motivation, greater well-being, and ERB. We do not know how these three things are causally related. It may be that intrinsic-motivation leads to well-being and ERB. It may be that people



who have greater well-being tend to be more intrinsically-motivated and more respectful of the environment. It may be that participating in ERB is intrinsically motivated and leads to greater well-being. However the causal relationship flows, these findings suggest that proven positive psychology interventions, such as loving kindness meditation, applied hope theory, the *gratitude visit*, or *three good things in life*, can be applied to potentially reduce the negative impacts of over-consumption on the Earth's living systems by making us more mindful of how the best things in life do not compete with the health of our environment. Furthermore, it is probable that the positive emotions cultivated by these positive interventions could be directly applied to our relationship with the Earth. With the gratitude interventions, for example, we could easily direct our gratitude toward the Earth and all that it has to offer us. Likewise, if each of us made a concerted effort to apply hope theory to the health of the planet, considerable progress toward improved environmental conditions would be made.

Freedom and choice are important components of the lives we lead – we view them as inalienable rights. Given the myriad choices available to us, how do we decide how to live our lives? With so many options, we are easily overwhelmed (Schwartz, 2004). Positive emotions are intrinsically motivated and motivating. They can be effectively used as a guide to identifying and choosing intrinsically motivated behaviors. Csikszentmihalyi (1990) describes *flow*, or optimal experience, as a psychological state where the information that is entering our awareness is congruent with our goals and actions (Csikszentmihalyi, 1990). Flow is not a state where we are inspired by doubt, regret, guilt, and fear. Flow is part and parcel to an array of positive emotions. And authentic states of flow tend to be intrinsically motivated. In a proper state of flow, positive emotions and intrinsic motivation are functioning together to form optimal experience. Although a state of flow offers many benefits, perhaps the most important is finding

meaning in our lives. Living a life of meaning, according to Csikszentmihalyi, involves coalescing our psychic energy into a “life theme” (p. 230). As we pursue meaning through an authentic life theme we achieve harmony. A crucial element of flow is *integration* – integrating ourselves and our actions with the complex world around us. In the last paragraph of his book, Csikszentmihalyi (1990) states:

The most promising faith for the future might be based on the realization that the entire universe is a system related by common laws and that it makes no sense to impose our dreams and desires on nature without taking them into account (p. 240).

Clearly, a life well lived that is steeped in meaning will follow a path congruent with the meanderings of the living ecosystem in which we find ourselves. To seek a path that is incongruent with the living system is, at best, suboptimal.

Positive emotions are intrinsically motivating in and of themselves – experiencing them brings us pleasure and greater well-being. Consequently, any behaviors inherently linked to them are intrinsically motivated. The experience of the emotion of awe, for example, can be thought to be predicated on a moment of intrinsic motivation - when the world aligns with our senses in such a way that the experience transcends normal everyday experience. Using self determination theory jargon, this experience is self-endorsed, volitional, and done willingly. The feeling of hope is intrinsically rewarding because it gives us the ability to imagine a realistic positive future. A sustained realistic positive future, by default, must include changes to those human behaviors that are contributing to damage being done to the living system of which we are all a part. Hope also allows us to identify and develop the strategies necessary to make such a positive future a reality. Gratitude is a personally rewarding emotion that connects us with other people and living things as we give thanks for the many blessings around us. The feeling of love may be

the most intrinsically-rewarding of all emotions. Giving and receiving love connects us. It raises our oxytocin levels, which is the biological manifestation of lifelong bonds of trust and intimacy (Fredrickson, 2009, p.48).

At the same time that cultivated positive emotions inspire ERBs, they are working to increase our satisfaction with life. Of the twenty-four character strengths and virtues identified by leading positive psychologists, Christopher Peterson and Martin Seligman (Peterson & Seligman, 2004), the three that are most synonymous with positive emotions are among the five most correlated with life satisfaction (Park, Peterson, & Seligman, 2004). In a study to investigate the relationship between character strengths and life satisfaction, nearly 5,300 adult participants were tested. The results showed that hope had the highest correlation to life satisfaction out of all twenty-four strengths. Gratitude was ranked third. And love was ranked fifth. The researchers wrote,

The robust associations between life satisfaction and the strengths of love, hope, and gratitude are not tautological and thus more intriguing. An explanatory structure for high life satisfaction may lurk here. Gratitude connects one happily to the past, and hope connects one happily to the future....Love – manifest in reciprocated close relationships – is the domain in which ongoing life plays itself out in the most fulfilling way (p. 613).

## CONCLUSION

The recognition that human well-being and the well-being of the Earth are one and the same resonates with our understanding of how our living system thrives. Yet we have become somehow separated from this understanding. Perhaps our understanding has not translated to our way of living because we have been viewing this convergence through the lens of cool detachment. Add to it that we are genetically adapted to bad being stronger than good, and have

developed societies and cultures that cultivate a detachment from the living system of which we are a part.

Although much has been leading up to it, the time has truly come to expand our vision of how cultivated positive emotions can inspire ERBs. Attempts to motivate desired behavior through negative emotions and programs designed to get at values and attitudes are important and necessary. But we have reached a point in our progress and understanding where it is clear that, without intrinsically oriented behaviors inspired by positive emotions, we will not make the progress necessary for overcoming and ameliorating the multitude of environmental crises in motion today.

As we have seen, there are a number of separate but related topics that come together to elucidate what motivates ERB. What has been presented is, in essence, a novel comprehensive theory that encompasses other theories, constructs, and empirical evidence and loosely adheres to form a new understanding of how positive emotions can be appropriately cultivated to increase both human well-being and ERB. First, we looked at negative emotions and why their short-term, reactive nature makes them less effective in motivating sustained behavioral change. Second, we looked at Fredrickson's broaden-and-build theory of positive emotion, and how positive emotions broaden our thought-action repertoires and build personal resources. Next, we looked at four specific positive emotions and how they can be cultivated to inspire a greater connectedness to Mother Earth. Fourth, we looked at self-determination theory, and how intrinsic motivations lead to greater well-being. We also looked at research showing how SDT informs ERB. Then, we looked at the affect heuristic, and how our feelings in response to external stimuli guide our actions. Next, we looked at how negative events are functionally independent from positive events, and why positive events require greater initiative and purpose.

And finally, throughout we examined a growing body of empirical research, which supports the primary hypothesis of this paper.

This is just the beginning of this field of inquiry. Even so, we are closing in on a compelling comprehensive understanding of how humans can best overcome the serious and imminent threat of environmental collapse. Some would say that uncovering this deep reality is no coincidence – humans are wired for survival, and this is just one manifestation of the ways in which humans will overcome this pending crisis. This may be true. But, what is important, however, is that we continue to increase our knowledge about how human behavior can be transformed without infringement upon those privileges of life, such as the pursuit of happiness and freedom of choice, that all of us hold dear. In the end, it is what we hold most dear that cultivated positive emotions empower; happiness, meaning, effortful engagement, relationships, maturity, and the ability to be resilient in difficult times (King, Eells, & Burton, 2004).

Like so many species in the Earth's past, we do not want to be passive bystanders living and dying by the planetary ebbs and flows of change, particularly if the threat to our existence is of our own doing. It will be much better for us to creatively, resourcefully, and positively work our way through the current crisis, and find a way of living that sustains us and the other living organisms on which we depend for survival. Fortunately, we are on the cusp of putting together the pieces of the puzzle that could substantially improve the likelihood that we not only survive but survive well. Cultivated positive emotions are a critical piece of the puzzle, as they lead to greater well-being and build mindfulness and awareness of the impacts of our individual and collective actions. This, in turn, intrinsically motivates us to focus our gifts on that which we care about most – the living system on which we all depend for sustained flourishing.

## FUTURE DIRECTIONS

What we know about how positive emotions inspire ERB is both hopeful and limited. It will be important to make a concerted effort to broaden and build our scientific understanding of this connection, and share this understanding with as large and diverse an audience as possible. There are three general areas under which the most useful and effective future directions fall.

### Learning More about the Power of Positive Emotions

Recently, Barbara Fredrickson talked about the need to do more to investigate the power of specific individual positive emotions – she sees this as the next step in the evolution of positive psychology (B. L. Fredrickson, personal communication, June 5, 2009). Obviously, this investigation will emphasize the discovery of the ways in which positive emotions influence our sense of well-being and overall happiness. Hopefully, this research will also take a broader perspective, and look at the ways in which our emotions affect our actions and vice versa. This perspective will need to take into account the social, cultural, and societal domains in which we live. We do not behave in a vacuum. The importance and power of our positive emotions are at work in all that we do.

We now know that materialism, and the never-ending desire to acquire more and more inspired by the hedonic treadmill, leads to nothing but decreased well-being (Brickman & Campbell, 1971; Gilbert, 2006; Kashdan & Breen, 2007; Kasser, 2002; King & Napa, 1998; Van Boven, 2005). Future research should focus on finding the link between this resultant lower level of well-being and lower positivity ratios. The broad-brush conclusion of such findings is that conspicuous (over)consumption is decreasing our sense of well-being and harming the environment at the same time. Clearly, social and societal norms that discourage such behavior must and will follow a better scientific understanding for why this is so.

More positively, we need a better understanding of the possibilities for our future that cultivated positive emotions can bring. We know that they can generally improve our attentional breadth, our intellectual capacity both cognitively and emotionally, and our relationships with others. We need to find out more about how this works and how this power can be applied in real-life situations.

### Consilience

One of the most striking realizations resulting from the effort to prepare this paper is that psychologists are, in many, but not all, cases, working strictly within their respective disciplines to develop an understanding of what influences ERB. Social and positive psychologists conduct research to support common theories, build upon each other's work, and collaborate together. Environmental and conservation psychologists do the same thing. However, it is much less common for the work of social psychologists and environmental psychologists to share common theoretical and empirical underpinnings. One look at the reference section of a published article from an environmental psychologist shows that the body of work on which the article is based is strongly oriented toward work done by scientists from the same discipline. This is true with social psychologists, and those from other disciplines, as well. In fact, it tends to be the tradition.

Shedding light on what inspires and motivates ERB deserves to benefit from the synergy of shared knowledge and effort. In this light, the tremendous success that Appreciative Inquiry (AI) has had in enriching and energizing the effectiveness of organizations is informative. Practitioners in this area are finding, sometimes with astonishing results, that “bringing the whole system into the room” is the best way to discover an organization's “positive core” and set the organization up for long-term thriving (Cooperrider, Whitney, & Stavros, 2008). An AI Summit notwithstanding, our understanding of how the “positive core” of positive emotions can

lead to ERB through sharing of ideas and information from all the social sciences is called for. This is critically important as environmental catastrophe becomes more and more imminent each day.

Some examples of areas where greater consilience (Wilson, 1998) can benefit our knowledge and understanding are as follows:

Evolutionary biologists and evolutionary psychologists can work together to identify those innate naturally-selected instincts that either support or inhibit lifestyle changes toward environmental sustainability. Once identified, it is possible to develop techniques to disrupt and short-circuit those instincts that foster over-consumption and life dissatisfaction. Techniques to heighten our better instincts can also be developed and applied.

Environmental, Social, and Positive Psychologists can combine forces to discover how emotions are functionally connected to values, intentions, and motivations. By becoming clearer about the ways in which specific positive (and negative) emotions inspire us, motivating the necessary behavioral changes will become easier.

Social and Ecopsychologists can collaborate to discover how we are deeply connected with nature in order to identify ways of cultivating this connection. These partners can also work to gain a better understanding of “eco-anxiety” and how its effects can be mitigated.

#### Extending Our Reach

Finally, it is more important than ever to bridge the immense chasm that exists between academic, research-based knowledge and the general populace. There is important work being done that does not make it into mainstream media. Of course, the market-driven system that dominates at the present time makes this difficult. Even so, psychologists and other social and physical scientists are often satisfied with their work never extending beyond the confines of the



academic establishment. It is a travesty of our society that the profound and applicable outcomes of this meaningful work are not finding their way to the majority of citizens. We all need to do a better job.

The environmental problems that we now face are so pressing that the psychological findings informing transformative behavior change must not only be known, but also must be integrated into public policy and private lives. The only way for this to happen is through individuals working together to initiate better pathways for dispersing knowledge. It is also important for psychologists and other scientists to become less concerned about being too prescriptive. Today, we need prescriptions for living in ways that reduce environmental impacts and increase well-being at the same time. Fortunately, some psychologists have been less shy about getting involved with transformative societal change. A movement, led by psychologists and economists, to measure the success of a society through more than just gross national product is gaining momentum (Diener, Lucas, Schimmack, & Helliwell, 2009; Layard, 2005). This is no small feat, but certainly one that is critically important to advancing ways of living that are complimentary to the planet. The best and most appealing news of all is that it is possible to do so without sacrificing well-being. Is there a more important message to communicate? Not likely.

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