



Published in final edited form as:

Explore (NY). 2009 ; 5(1): 37–44. doi:10.1016/j.explore.2008.10.001.

## The Role of Mindfulness in Positive Reappraisal

Eric Garland<sup>1,2</sup>, Susan Gaylord, and Jongbae Park

University of North Carolina – Chapel Hill

### Abstract

Mindfulness meditation is increasingly well known for therapeutic efficacy in a variety of illnesses and conditions, but its mechanism of action is still under debate in scientific circles. In this paper we propose a hypothetical causal model that argues for the role of mindfulness in positive reappraisal coping. Positive reappraisal is a critical component of meaning-based coping that enables individuals to adapt successfully to stressful life events. Mindfulness, as a metacognitive form of awareness, involves the process of decentering, a shifting of cognitive sets that enables alternate appraisals of life events. We review the concept of positive reappraisal in transactional stress and coping theory; then describe research and traditional literature related to mindfulness and cognitive reappraisal, and detail the central role of mindfulness in the reappraisal process. With this understanding, we present a causal model explicating the proposed mechanism. The discussion has implications for clinical practice, suggesting how mindfulness-based integrative medicine interventions can be designed to support adaptive coping processes.

### Keywords

Mindfulness; positive reappraisal; cognitive appraisal; coping; stress

### Introduction

Among the many interventions at the forefront of integrative medicine, mindfulness meditation is increasingly well regarded for its therapeutic efficacy in a broad range of illness, conditions, and settings. Although the operationalization of the construct is still under debate in academic circles, simply described, mindfulness is a mode of awareness characterized by a present-centered attention to raw experience liberated from cognitive abstractions and preoccupations.<sup>1, 2</sup> While mindfulness practice is at the heart of ancient Buddhist traditions, and as such, has been practiced, analyzed, and debated for centuries, it is only within the past decade that mindfulness has received significant attention in the medical and psychological literatures. Indeed, there is mounting empirical evidence of the role of mindfulness in reducing stress and improving health outcomes across conditions as diverse as anxiety<sup>3</sup>, depression<sup>4</sup>, anger<sup>5</sup>, cancer<sup>6</sup>, substance abuse<sup>7</sup>, fibromyalgia<sup>8</sup>, and even psoriasis.<sup>9</sup> Despite growing evidence for

<sup>1</sup>Acknowledgement: This publication was made possible by Grant Number (T32 AT003378) from the National Center for Complementary and Alternative Medicine (NCCAM). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NCCAM, or the National Institutes of Health. Eric L. Garland is a recipient of the George H. Hitchings Fund for Health Research and Science Education of the Triangle Community Foundation, Durham, NC, which has supported the development of this manuscript

<sup>2</sup>We would like to acknowledge Drs. Matthew Howard and Gary Bowen from the UNC School of Social Work for their helpful reviews of this manuscript.

Corresponding Author: Eric L. Garland, 19 Copper Hill Ct., Durham, NC 27713, Telephone: 919-943-6022, Email: E-mail: elgarlan@email.unc.edu.

the clinical utility of mindfulness, there is considerable debate in scientific circles over its therapeutic mechanism of action.

The practice of mindfulness involves a variety of meditative techniques designed to focus attention on experience in the present moment.<sup>10, 11</sup> While it is sometimes assumed that meditative techniques promote health by triggering a relaxation response<sup>12</sup>, criticism has been leveled against the conceptualization of mindfulness practice as a relaxation technique.<sup>10</sup> Putatively, the process of mindfulness extricates attention from being fixated on evaluative language, enabling nonjudgmental, metacognitive awareness of thoughts and feelings.<sup>2, 10</sup> This process is described as involving a shift in cognitive sets known as decentering, a stepping back from mental experience that results in the realization that thoughts are not facts.<sup>13, 14</sup> How this shift of attentional focus may result in salutogenesis is still unknown. In this paper we explore a hypothetical mechanism through which mindfulness promotes health via positive reappraisal, a form of meaning based coping.

Since the work of the great medical sociologist Antonovsky e.g.<sup>15</sup>, it has been empirically demonstrated that coping with adversity is a critical component of health. Of the many forms of coping outlined by Lazarus and Folkman in their seminal transactional theory of stress<sup>16</sup>, the construct of positive reappraisal is especially salient. Positive reappraisal, a form of meaning-based coping, is the adaptive process by which stressful events are re-constructed as benign, valuable, or beneficial. Research has demonstrated that the ability to find benefit from adversity is associated with improved health outcomes.<sup>17, 18, 19</sup> In spite of the known significance of positive-reappraisal coping to healing, the literature has largely ignored the question of how mindfulness may leverage this adaptive coping process. In this paper we propose a hypothetical causal model that delineates the interactional dynamics between mindfulness and positive reappraisal.

Given the relevance of positive reappraisal for health, it behooves the clinician and researcher alike to discover the mechanism by which it operates. How does a person disengage from a previously established stress appraisal to construct a more adaptive appraisal of their circumstances? Here, we propose that the mechanism allowing one to shift from stress appraisals to positive reappraisals involves the metacognitive mode of mindfulness, a mode in which thoughts are experienced as transient, psychological events rather than reflections of absolute reality. The *practice* of mindfulness may facilitate and strengthen this capacity for positive reappraisal.

To understand the role of mindfulness in positive reappraisal, we first review the concept of positive reappraisal in transactional stress and coping theory. Next, we review research related to mindfulness and cognitive reappraisal, based on a targeted search and focused analysis of extant research. We then identify traditional Buddhist views that implicate mindfulness' role in positive reappraisal. Based on this conceptual review, we then detail the hypothesized central role of mindfulness in the reappraisal process, presenting a causal model explicating the proposed mechanism. Finally, we discuss implications for clinical practice, suggesting a potential leverage point, a linchpin with which mindfulness-based integrative medicine interventions can be designed to support coping processes.

## Positive reappraisal as an adaptive coping process

Lazarus and Folkman<sup>16</sup> identified appraisal as central to the stress process. When a given stimulus is initially appraised as challenging, harmful, or threatening, an activation of physiological systems involved in the stress response co-occurs with a subjective experience of distress. For example, one such biological stress pathway involves the stimulation of the hypothalamic-pituitary-adrenal (HPA) axis leading to elevated secretion of cortisol.<sup>20</sup> Primary appraisal of the stimulus is then followed by a cognitive process of secondary appraisal in

which one's resources and coping options are weighed against the perceived demands of the actual or potential harm. The biopsychosocial sequelae of the stress reaction result from evaluation of one's resources as insufficient to negotiate the challenge presented by the threatening stimulus. Such stress appraisals may result in prolonged HPA axis activation, leading to a disruption in the homeostasis of multiple body systems through the cortisol-mediated stress-response, which in turn is a significant regulatory factor for disease-generating events.<sup>21</sup>

However, this evaluative process is dynamic and mutable; new data from the changing environment coupled with novel information about one's own reactions to the threat may initiate a reappraisal process, in which one's original appraisal is changed as a result of the feedback. A stimulus that was originally appraised as threatening may be reinterpreted as benign, such as in the case of an encounter with an intimidating stranger who later turns out to be benevolent. Conversely, what was once held to be benign may be later appraised as threatening. Thus, the stress reaction is potentially intensified or attenuated by reappraisals.

Research has found that people often experience positive outcomes from stressful events, even though the events themselves did not have concretely beneficial resolutions, including perceiving benefit from facing adversity<sup>22</sup> and feeling as if one had grown from dealing with the stressful event.<sup>23, 24</sup> These findings are incongruent with Lazarus and Folkman's original transactional model.<sup>16</sup> In their classic model, positive affect is the product of successful resolution of the stressful event. However, this model does not detail the pathways by which meaning-based coping generates positive affect in the midst of unresolved stressful events, nor does it factor the effect of positive emotion on adaptational responses.<sup>25</sup>

Positive reappraisal has been found to reduce distress in the face of a number of medical conditions, including breast cancer<sup>26</sup>, amyotrophic lateral sclerosis<sup>27</sup>, traumatic brain injury<sup>28</sup>, and myocardial infarction<sup>29</sup>, among others. This finding is particularly evident in a seminal investigation conducted by Folkman and colleagues<sup>30, 31</sup> who used mixed quantitative and qualitative methods to discern the relationship between coping and stress in caregivers for partners who were terminally ill with AIDS. They found that many caregivers in their sample coped with chronic stress by actively striving to construe events as positive and imbue events with positive meaning. After statistically controlling for the influence of other types of coping, caregivers' use of positive reappraisal was significantly correlated with the experience of positive affect in the time leading up to and following the death of their partners. Despite the inevitable illness and death of their loved ones, caregivers used reappraisal to feel positive emotions in the face of situations that could have no benign resolution.

Positive reappraisal is an active coping strategy<sup>30</sup>, rather than a defense mechanism used to repress or deny. Unlike suppression of negative emotions which can cause increased sympathetic nervous system activation<sup>32</sup>, positive reappraisal does not lead to physiological or psychosocial complications.<sup>33, 34</sup> In addition, positive reappraisal is often the first step towards a reengagement with the stressor event. For instance, a person stricken with a non-fatal heart attack might positively reappraise the event as an opportunity to change their lifestyle and subsequently begin to make changes in diet and exercise behaviors. Alternatively, a person who has recovered from cancer might view their survival of the disease as evidence of their strength and resilience, and they might decide to dedicate their life to helping others make similar recoveries. Hence, positive reappraisal is an adaptive rather than an avoidant strategy - one that can be leveraged by clinicians to optimize the well-being of their clients. Indeed, the demonstrably efficacious process of cognitive restructuring in Beck's ubiquitous cognitive therapy<sup>35, 36, 37, 38, 39</sup> involves positive reappraisal training.

## Hypothesized role of mindfulness in positive reappraisal: A metacognitive framework

Regulating attention intentionally upon consciousness and its contents<sup>1</sup> in a moment-by-moment, non-discursive, receptive manner<sup>40</sup> induces the naturalistic, metacognitive function of mindfulness. Mindfulness is naturalistic in that it is an inherent mental capacity of the human organism, although persons differ in their ability and willingness to actualize this capacity.<sup>2, 41</sup> Mindfulness is metacognitive in the sense described by Nelson, Stuart, Howard, and Crowley<sup>42</sup>: it involves a meta-level of awareness which monitors the object of cognition while reflecting back upon the processes of cognition itself. Mindfulness is more like a mode than a trait, in that attending in a mindful way generates a transitory metacognitive state that remains for as long as that form of attention is sustained.<sup>43</sup> Hence, mindfulness is an innate psychological function that can be fostered by training.

The metacognitive stance of mindfulness can moderate the impact of potentially distressing psychological content through the mental operation of stepping back from thoughts, emotions, and sensations. The process by which persons step back from their experience to shift cognitive sets, alternately termed decentering<sup>13</sup> or reperceiving<sup>44</sup>, has vital importance to the study of stress and coping and may represent an unexplained link between appraisal and reappraisal. This link involves a second-order rather than first-order change, a shift in mental process rather than in contents.<sup>45</sup>

In their theoretical model, Shapiro, Schwartz, Astin, and Freedman consider the shift in perspective involved in reperceiving a “meta mechanism” of mindfulness.<sup>44</sup> Reperceiving is thought to lead to an objectification of or disidentification from mental contents. In turn, this mental shifting from the contents of consciousness to the process of consciousness itself eventuates in a number of direct change mechanisms, including: self-regulation; values clarification; cognitive, emotional, and behavioral flexibility; and exposure.<sup>44</sup> Such therapeutic mechanisms may unfold from the liberation of awareness from fixed or schematized narratives about self and world. Shapiro et al. suggest that “through reperceiving brought about by mindfulness, the stories (e.g. about who we are, what we like or dislike, our opinions about others, etc.) that were previously identified with so strongly become simply ‘stories’.”<sup>44(p379)</sup> These authors contend that disidentification from socially-conditioned narratives enables the selection of values that are more congruent with the individual. However, the mental shifting of reperceiving or decentering may afford an even more fundamental cognitive flexibility. Ultimately, reperceiving may facilitate the flexible selection of cognitive appraisals, as “we become able to reflectively choose what has been previously reflexively adopted or conditioned”.<sup>44(p380)</sup>

Thus, we argue that mindful decentering allows for the possibility of positive reappraisal. For one to re-construe his or her appraisal of a given event as positive, one must disengage and withdraw from the initial appraisal into a momentary state of metacognitive awareness that attenuates semantic evaluations associated with the event. Hence, the cognitive shifting afforded by the naturalistic state of mindfulness facilitates the attribution of new meaning to previously stressful events. Once this state of mindfulness consciousness is established, one may redefine or reframe his or her circumstances as meaningful, in a way that engenders hope and resilience. In this way, mindfulness is an intrinsic and central component of meaning-based coping. Accordingly, if the basic human capacity to make reappraisals involves the action of a naturally-occurring mindfulness, then mindfulness *training* should augment one’s ability to make positive reappraisals in the face of acute and chronic stressors. The next section will detail empirical evidence in support of this hypothesis.

## Traditional Buddhist concepts of mindfulness that support its role in positive reappraisal

Buddhist understanding of the mechanism of mindfulness training (shamatha in Sanskrit, translated as “peacefully abiding”, or satipatthana in Pali, translated as “the foundation of mindfulness”) lends theoretical support to its role in positive reappraisal. Across Theravada, Mahayana, and Tibetan Buddhist traditions, the basic objective of mindfulness is to develop a mind that is free from obscuration and conflict, that is stable, clear, strong, and supple.<sup>1, 46, 47</sup>

According to Buddhist theory, stability is developed by repeatedly placing one’s mind on an object, so that eventually one’s attention can remain on the object without distraction.<sup>46, 48</sup> The object is usually the breath, but it can also be external, such as a candle flame, or internal, such as the breath or a visual image. During the practice of mindfulness, thoughts often arise, and the instructions for dealing with thoughts are to simply note them non-judgmentally, let them go, and return to the object of meditation. The process of letting go is central to the Buddhist theory of mindfulness’ beneficial effect. By noticing and releasing distracting thoughts and feelings, one is able to let go of clinging to memories of the past and hopes and fears of the future, based on habitual patterns of thought. Not only does one begin to perceive thoughts as mere thoughts rather than reality, but in letting go of the obscuration of thoughts, one is therefore able to perceive and respond freshly to present-moment experience. Moreover, by letting go thoughts and emotions, over and over, there is a reduction in ego clinging, the serious, big-deal quality of who we think we are – and a corresponding increase in spontaneity, humor, and humbleness. In this spaciousness of the present moment, new ways of perceiving and thinking about situations can arise. This latter product of the practice of mindfulness is traditionally known as insight (vipassana or vipashyana)..<sup>48, 49</sup> “Insight is the higher view that draws conclusions about what awareness sees.”<sup>46(p189)</sup> It is in this spacious present-centered, metacognitive state of mind that positive reappraisal can take place.

But why *positive* reappraisal? The psychological construct of positive reappraisal is described as an adaptive coping strategy<sup>25</sup>, rather than as a defense mechanism, thus “positive” should not be construed as being blinded by self-centered, wishful thinking. This same perspective on reappraisal is described in the traditional Buddhist literature as the process of the mind’s becoming less clouded by ego-centered thinking. The ego-clouded mind is a self-absorbed state characterized by such negative emotions as jealousy, resentment, and hatred. In Tibetan Buddhism, strong negative emotions are characterized as *migewa* – Sanskrit for non-virtue – and are considered the product of a weak, confused mind. The practice of mindfulness, results in a strengthening of the mind, concomitantly decreasing *migewa* while increasing *gewa*, or virtue. [46] Virtuous states of mind include such positive qualities as generosity, compassion, gentleness, and patience. Thus, the strong, peaceful mind cultivated by mindfulness practice enhances qualities more akin to what is termed “Buddha nature,” or awakened mind – the perception of “things as they are”. Awakened mind is not a blank or neutral state, but a fundamentally “positive” state of being. The Shambhala Buddhist literature describes this quality as “basic goodness.”<sup>50</sup> Such traditional conceptualizations support the notion of mindfulness’ role in positive reappraisal.

## Empirical scientific evidence in support of the hypothesized mechanism

Fresco et al.<sup>51</sup> addressed the connection between the ability to shift cognitive sets and positive reappraisal, examining the correlation between these constructs as part of an attempt to validate a self-report measure of decentering, the *Experiences Questionnaire-Decentering Factor*. This factor contains items such as “I can separate myself from my thoughts and feelings” and “I can observe unpleasant feelings without being drawn into them.” Data obtained from a sample of

61 college students who were administered *Decentering Factor* questions and the *Emotional Regulation Questionnaire*<sup>52</sup> evidenced a significant but modest correlation of ( $r = .25, p < .05$ ) on measures of decentering and positive reappraisal, indicating that the two constructs are distinct but interrelated.

Coffey and Hartmann<sup>53</sup> used structural equation modeling to depict the mediational relationships between mindfulness and psychological distress. Two samples of college students ( $N=204$  and  $N=258$ ) were administered a number of self-report instruments, including a measure of trait mindfulness, the *Mindful Attention Awareness Scale*<sup>40</sup>, and a measure of emotion regulation, the *Repair* subscale from the *Trait Meta-Mood Scale*<sup>54</sup> which includes items related to positive reappraisal, such as “No matter how badly I feel, I try to think about pleasant things.” Statistical mediation was tested using a path analysis, which found that mindfulness exerted a significant indirect effect on psychological distress through emotion regulation ability. The authors offer the interpretation that mindfulness leads to increased awareness of negative affective states, alerting the individual to the need to implement coping strategies as a means of dealing with the stressful event. However, in light of our hypothesized mechanism, an equally plausible but overlooked interpretation is that mindfulness leads to emotion regulation via decentering from emotions and their cognitive antecedents, thereby enabling the engagement of salutary coping processes. Regardless of the interpretation, it is clear from this research that cognitive emotion regulation strategies (of which positive reappraisal is an exemplar) partially mediate the distress reducing action of mindfulness.

In addition to these two cross-sectional studies, a longitudinal study of the effects of mindfulness training on attentional subsystems provides suggestive support for the hypothesis that mindfulness undergirds positive reappraisal.<sup>55</sup> The attentional functioning of naïve meditators participating in an 8-week mindfulness-based stress reduction course was measured by their performance on the Attention Network Test (ANT).<sup>56</sup> At post-test, Jha et al. found that relative to controls, participants in the mindfulness-based stress reduction course evidenced significantly greater increases in their ability to shift their focus from one object to the next. While this study demonstrates that mindfulness training facilitates visual orienting functions, mindfulness may have similar facilitative effects on cognitive switching, since visual and conceptual switches involve interrelated neural networks.<sup>57</sup> Cognitive switching is the ability to shift stimulus-response sets encoded as cognitive representations, restructuring associative processes to adapt to environmental demands.<sup>58</sup> Studies using electroencephalographic event-related potential (ERP) methodologies and functional magnetic resonance imaging (fMRI) suggest that attentional orienting, whether visual, auditory, or cognitive, is controlled by a common network of brain structures. These structures, including regions of frontal and parietal cortex, exert a top-down influence over perceptual processes.<sup>59</sup>

Given the findings of Jha and colleagues<sup>55</sup>, one can speculate that the effects of mindfulness training on orienting may generalize to cognitive switching as well, for as Brown et al. assert, “Thoughts, then, including mental images, narratives, and other cognitive phenomena, can be regarded as objects of attention and awareness, just as are sights, sounds, and other sensory phenomena.”<sup>29</sup> Positive reappraisal may be conceptualized as a specific case of cognitive re-orienting, involving a disengagement or decentering of the attention from an initial semantic object (the primary or secondary appraisal) to move to engage a new semantic object (the reappraisal). If mindfulness meditation training enhances one’s ability to shift from one visual object to another, then it is possible that such training may facilitate the cognitive-semantic shifts involved in positive reappraisal by engaging the metacognitive, nonconceptual, decentered mode of mindful awareness.

Another recent study of intensive mindfulness training may offer support that mindfulness undergirds positive reappraisal via cognitive switching. Chambers, Lo, and Allen<sup>60</sup> used a

wait-list control group design to study the impact of a 10-day mindfulness retreat on novice meditators. In addition to examining the effect of mindfulness on self-reported affect, the authors tested the process of attention switching, or the ability to shift cognitive sets, via a novel experimental task, the Internal Switching Task (IST), which involves maintaining a count of how many affective words have been serially presented on a computerized display. During this task, subjects are asked to imagine being characterized by these emotion words and then ascertain whether the word was positively or negatively valenced. Subjects press a key when they have updated their mental count and are ready to be presented with the next word, and reaction times between word presentation and key press are recorded. The mindfulness training group exhibited a significant decrease in reaction times on the IST from pre- to post-retreat that was not observed in the control group. In addition, pre-post reduction in reaction times on the IST significantly correlated with decreases in depressive symptoms. These findings suggest that mindfulness training facilitates attention switching from negative to positive emotional stimuli, and, consistent with our hypothesis, training-related enhancements in attention switching are associated with improved affect. Such attention switching may indeed be at the heart of positive reappraisal.

These findings that mindfulness may influence positive reappraisal through attentional mechanisms have support from basic psychological science. It has been empirically demonstrated that positive emotional states are strongly related to broadened attentional focus. The work of Isen has demonstrated that positive emotions enhance creative thinking, enlarge semantic categories to include more disparate concepts, and increase one's ability to make meaningful associations<sup>61</sup>. Fredrickson and Branigan<sup>62</sup> found that pleasant feelings expand visual attention from a focus on fine visual details to a more global, holistic view, i.e. seeing the forest before the trees. Recent experimental research by Anderson complements and extends this work, showing that positive affective states result in enhancements in semantic associations between remotely related terms that are correlated with increased breadth of visual attention.<sup>63</sup> Hence the relation between positive emotion and attention appears to be causal, in that experimentally inducing positive feelings leads to broadened conceptual-semantic domains and expanded visual attention. However, it is plausible that this is a bi-directional causal relation, such that attentional broadening may also lead to increased capacity for positive emotions. If so, mindfulness practice, which expands attention, may facilitate reappraisal by relaxing inhibitory cognitive control, leading to a generative, flexible, and positively-valenced state of mind.

### **Pilot research on the role of mindfulness practice in positive reappraisal**

Our own research lab is currently conducting a clinical investigation of how mindfulness training ameliorates stress-related illness through its impact on cognitive coping strategies. Preliminary analyses of two cohorts (N=17) of participants in our mindfulness-based stress and pain management (MSPM) program support our hypothesis that mindfulness undergirds positive reappraisal. MSPM class participants were administered a battery of questionnaires pre and post an eight-week intervention based on the mindfulness program designed by Kabat-Zinn.<sup>64</sup> The group intervention involved training in both formal and informal mindfulness practice, including sitting and walking meditation, as well as the use of mindfulness during daily activity.

Self-reported mindfulness was measured with the well-validated Five Facet Mindfulness Questionnaire.<sup>65</sup> Positive reappraisal was measured with items from the Cognitive Emotion Regulation Questionnaire.<sup>66</sup> which ask to what extent one copes with adverse life events with thoughts such as "I think I can become a stronger person as a result of what happened," "I think I can learn something from the situation," and "I think that the situation also has positive sides." A number of statistical relationships were found to support our hypotheses that mindfulness

facilitates positive reappraisal. First, paired samples t-tests revealed that positive reappraisal scores significantly increased from pre- to post-intervention,  $t = 3.275$ ,  $df = 16$ ,  $p = .005$ , as did overall mindfulness scores,  $t = 5.084$ ,  $df = 14$ ,  $p < .001$ . Second, post-intervention mindfulness was found to strongly positively correlate with post-intervention positive reappraisal,  $r = .786$ ,  $p < .001$ .

These findings, while preliminary and based on an uncontrolled pilot study, have implications for our proposed theoretical mechanism. Mindfulness training appeared to increase positive reappraisal as a means of coping with stressful events. By the end of the eight-week intervention, persons with higher self-reported mindfulness also reported higher levels of positive reappraisal. Given that the intervention amplified mindfulness, increased engagement of the mindful coping pathway outlined in this paper may have augmented the use of positive reappraisal. However, due to a lack of statistical power, mediational analyses were not conducted to fully test this hypothesis. In addition, due to the uncontrolled nature of our design, these findings are subject to a number of serious threats to internal validity, including maturation, history, and testing threats which render our results tentative at best. Without a comparison group, it is impossible to determine whether positive reappraisal increased due to mindfulness training, non-specific therapeutic factors (e.g. attention by a caring instructor, social support, motivation to participate in an intervention), or simply due to the passage of time. Nevertheless, the observed correlations suggest that future investigation of our hypothesis is warranted, using growth curve analysis of a full-scale, randomized controlled trial to explore the trajectories of positive reappraisal as mediated by levels of mindfulness.

## The Mindful Coping Model

Based on this theoretical proposal and bolstered by empirical support, we present the following causal model of the role of mindfulness in the positive reappraisal process (see Figure 1). Only the pathways between mindfulness and positive reappraisal are detailed in the mindful coping model.

This model builds upon our earlier conceptual framework of stress, metacognition, and coping.<sup>67</sup> As seen in Figure 1, the transactional model of stress and coping<sup>16, 30</sup> has been unpacked in the mindful coping model. According to this model, when a given event is appraised as a threat, harm, or loss that exceeds one's capabilities, the individual may initiate an adaptive response by decentering from this stress appraisal into the mode of mindfulness, wherein one attends to the dynamic process of consciousness itself rather than its contents. This mode increases attentional flexibility and broadens awareness. From the vantage point of this expanded, metacognitive awareness, one can then reappraise the given event in a positive manner by attributing to it new meaning. This new attribution may arise either through a conscious process of reflection or a more automatic process, based on spontaneous insight. The reappraisal of the event then results in positive emotions such as compassion, trust, confidence and equanimity which reduce stress and in turn influence subsequent appraisal processes.

## Discussion

The mindful coping model is designed to elucidate a mechanism central to emotionally-focused coping processes. In so doing, it provides a conceptual map to guide future research on the underpinnings of positive reappraisal. Additionally, this model provides both rationale and impetus for viewing mindfulness and mindfulness training as a fulcrum for clinical interventions, that when leveraged can bolster the meaning-based coping of clients under duress.



Clinical interventions can be designed to utilize the mindfulness processes inherent in positive reappraisal by explicitly training clients to first decenter from stress appraisals into a metacognitive mode, and then to reappraise the stressor event as an impetus for growth or a source of benefit. By teaching a client to consciously cultivate non-discursive, receptive metacognition in the face of a stressor, they may more easily detach from maladaptive appraisals of the event, thereby facilitating new conceptualizations that reduce negative affect and empower the individual.

In this way, mindfulness meditation can be incorporated into cognitive therapy to potentiate cognitive restructuring efforts. This use of mindfulness is innovative. Although mindfulness-based cognitive therapy (MBCT) integrates the principles of mindfulness-based stress reduction within the frame of cognitive therapy<sup>13</sup>, the approach suggested by our conceptual review would marry complementary aspects of both treatments, targeting both the process (via mindfulness training) and content (via cognitive restructuring) of consciousness. This hybridized therapy would target the meta- and object-levels of cognition that drive self-perpetuating “depressive interlock” schemata implicated in the maintenance of mood disorders.<sup>42, 68</sup>

Despite its potential clinical utility, the mindful coping model is a work in process and does have limitations. First, the presence of such a mechanism may be difficult to substantiate due to a temporal dilemma; initial stimulus perception, appraisal, coping efforts, and reappraisal processes manifest as a phenomenally integrated holism. It is likely that the phase of mindfulness consciousness integral to the positive reappraisal process of non-meditators is extremely brief, thereby making its detection difficult. Second, mindfulness may facilitate coping through other pathways in addition to positive reappraisal. For example, mindfulness may mitigate stress-related problems by reducing one’s tendency to utilize maladaptive coping strategies. Lastly, other executive cognitive control functions may mediate positive reappraisal. Prepotent response inhibition and the updating and monitoring of working memory representations are important subcomponent processes of cognitive control that are implicated in the performance of higher-order, complex executive tasks.<sup>57</sup>

It must be noted that this paper proposes an apparent paradox: mindfulness is a mode of non-evaluative and non-judgmental awareness, whereas positive reappraisal attributes a positive valence to experience. Hence, striving to reconstrue situations as positive would seem to be contrary to mindfulness. Indeed, this conceptualization may not wholly accord with classic Buddhist literature.<sup>1</sup> Traditionally, mindfulness would not be used to make positive reappraisals, because in the Asian cultures in which it was first described, positivity and negativity are held to be indivisible aspects of a complementarity.<sup>69</sup> The pursuit of positive experience inevitably results in emotional pain, as the transience of time leads to change and the loss of what was sought after.<sup>69, 70</sup> Loss then drives one in search of the means to improve his or her situation, which inexorably leads to the same frustration: a double-bind in which the seeker is caught by the very act of seeking.<sup>70, 71</sup> In traditional cultural descriptions of the construct, mindfulness offers the way out of this circular trap of dualistic thinking.<sup>67</sup> attenuating emotional distortions of stimuli perception by encouraging non-evaluative contact with phenomenological experience.<sup>45</sup>

Given this traditional conceptualization of non-striving and mindfulness, how can the claim be made that mindfulness is a critical component in the mechanics of positive reappraisal? Again, it is our contention that mindfulness facilitates positive reappraisal in that it allows for a decentered mode of awareness from which new cognitive appraisals of self and world can be made. Mindfulness may therefore be seen as a precondition or initial phase in the reappraisal process, but should not be considered synonymous with positive reappraisal itself. We hypothesize that the two components are separable, in much the same way that mindful

awareness is distinct from but a part of lovingkindness meditation. In some cultures, such as Theravada or Zen Buddhism, which emphasize austerity or asceticism, mindfulness may not be used to make positive reappraisals, whereas in other traditions, such as Tibetan Buddhism with its concept of gewa and migewa, mindfulness might lead to benevolent attributions about the nature of reality. In Western cultures, where attribution of linguistic meaning seems to be part of the developmental process of mind in society<sup>72</sup>, mindfulness and positive reappraisal may be more tightly coupled. The Western mind is embedded in stories and narratives; while mindfulness may temporarily suspend evaluative language, it is inevitable that Westerners will reengage their narratives. Mindfulness may allow for the possibility of a positive reengagement with the conditions of life.

Despite the limitations and cautions discussed above, the implications of this conceptualization of mindfulness and its role in positive reappraisal are manifold. Randomized controlled trials of mindfulness training could investigate how decentering partially mediates positive reappraisal, and subsequently, how positive reappraisal partially mediates the therapeutic impact of mindfulness training. Such mediational models could be further explicated by systematic, first-person accounts of how mindfulness training influences emotionally-focused coping processes. Such a mixed methods approach would capture the interpenetrating qualitative and quantitative aspects of the phenomena in question.

Additionally, the aforementioned hypothesis could guide a biopsychosocial research program, using neuroimaging technologies, psychophysiology data, and performance-based psychological tasks to complement self-reports of persons using positive reappraisal to cope with stressful life events. In so doing, one could explore the bio-behavioral correlates of the influence of mindfulness on the positive reappraisal process. Such translational research would further illuminate the underpinnings of successful adaptation in the face of irresolvable adversity, thereby affording new targets for clinical interventions.

In conclusion, the question of what makes positive reappraisals possible is critical for the application of transactional stress and coping theory to the practice of integrative medicine. Clinicians are often faced with assisting patients suffering from stress-related illness, and hence it is essential that practitioners have tools to prevent, treat, and mitigate these chronic and pernicious conditions. By adding mindfulness to the clinical armamentarium, integrative interventions can augment meaning-based coping to improve biopsychosocial outcomes. Mindfulness may enable us to grasp the “handle of cognition”<sup>73(p163)</sup> to cope with and gain agency over our lives.

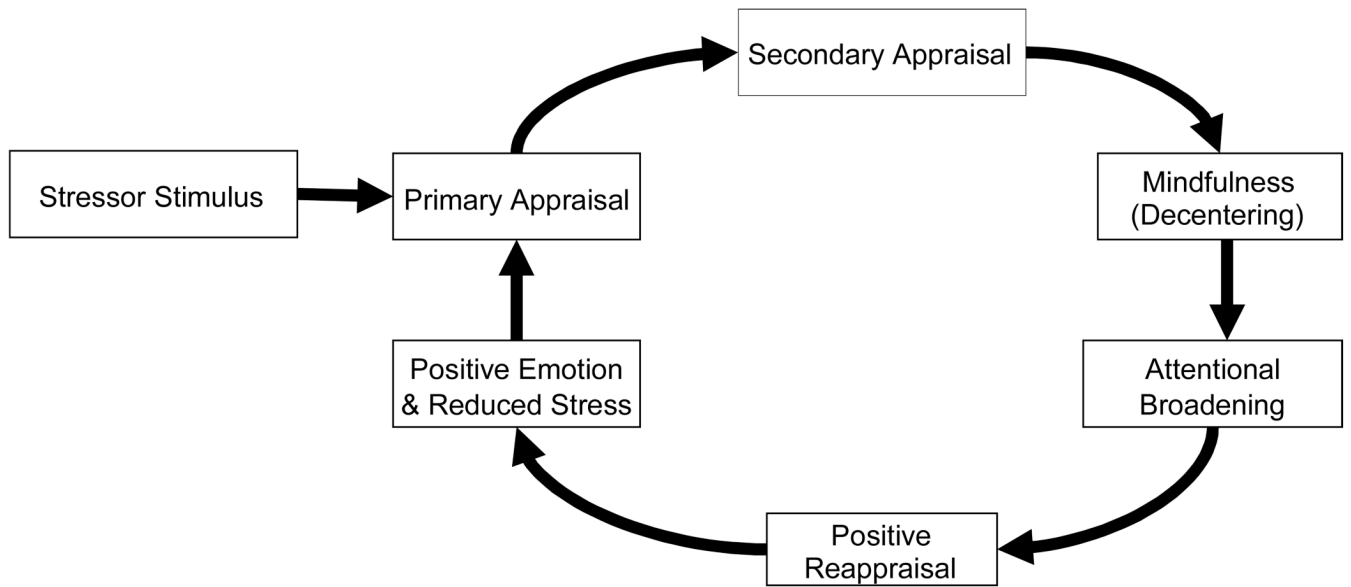
## REFERENCES

1. Kalupahana, DJ. The principles of Buddhist psychology. Albany: State University of New York Press; 1987.
2. Brown KW, Ryan RM, Creswell JD. Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*. in press
3. Kabat-Zinn J, Massion AO, Kristeller J, et al. Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *Am J Psychiatry* 1992 Jul;149(7):936–943. [PubMed: 1609875]
4. Teasdale JD, Moore RG, Hayhurst H, Pope M, Williams S, Segal ZV. Metacognitive awareness and prevention of relapse in depression: empirical evidence. *J Consult. Clin. Psychol* 2002 Apr;70(2):275–287. [PubMed: 11952186]
5. Specia M, Carlson LE, Goodey E, Angen M. A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosom Med* 2000 Sep–Oct;62(5):613–622. [PubMed: 11020090]
6. Carlson LE, Specia M, Faris P, Patel KD. One year pre-post intervention follow-up of psychological, immune, endocrine and blood pressure outcomes of mindfulness-based stress reduction (MBSR) in

- breast and prostate cancer outpatients. *Brain Behav Immun* 2007 Nov;21(8):1038–1049. [PubMed: 17521871]
7. Bowen S, Witkiewitz K, Dillworth TM, et al. Mindfulness meditation and substance use in an incarcerated population. *Psychology of Addictive Behaviors* 2006 Sep;20(3):343–347. [PubMed: 16938074]
  8. Grossman P, Tiefenthaler-Gilmer U, Raysz A, Kesper U. Mindfulness training as an intervention for fibromyalgia: evidence of postintervention and 3-year follow-up benefits in well-being. *Psychother Psychosom* 2007;76(4):226–233. [PubMed: 17570961]
  9. Kabat-Zinn J, Wheeler E, Light T, et al. Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosom Med* 1998 Sep–Oct;60(5):625–632. [PubMed: 9773769]
  10. Bishop SR. What do we really know about mindfulness-based stress reduction? *Psychosom Med* 2002 Jan–Feb;64(1):71–83. [PubMed: 11818588]
  11. Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003 Apr;84(4):822–848. [PubMed: 12703651]
  12. Benson H, Beary JF, Carol MP. The relaxation response. *Psychiatry* 1974 Feb;37(1):37–46. [PubMed: 4810622]
  13. Segal, Z.; Williams, JM.; Teasdale, JD. *Mindfulness-based cognitive therapy for depression*. New York: The Guilford Press; 2002.
  14. Teasdale JD, Segal Z, Williams JM. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behav Res Ther* 1995 Jan;33(1):25–39. [PubMed: 7872934]
  15. Antonovsky, A. *Unraveling the mystery of health*. San Francisco: Jossey-Bass; 1987.
  16. Lazarus, R.; Folkman, S. *Stress, appraisal, and coping*. New York: Springer; 1984.
  17. Carver CS, Pozo C, Harris SD, et al. How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. *J Pers Soc Psychol* 1993;65(2):375–390. [PubMed: 8366426]
  18. Himelein MJ, McElrath JV. Resilient child sexual abuse survivors: Cognitive coping and illusion. *Child Abuse Negl* 1996;20(8):747–758. [PubMed: 8866120]
  19. Major B, Richards C, Cooper ML, Cozzarelli C, Zubek J. Personal resilience, cognitive appraisals, and coping: an integrative model of adjustment to abortion. *J Pers Soc Psychol* 1998 Mar;74(3):735–752. [PubMed: 9523416]
  20. Kaye, JM.; Lightman, SL. Psychological stress and endocrine axes. In: Vedhara, K.; Irwin, M., editors. *Human psychoneuroimmunology*. New York: Oxford University Press; 2005. p. 53-80.
  21. Rosmond R. Role of stress in the pathogenesis of the metabolic syndrome. *Psychoneuroendocrinology* 2005 Jan;30(1):1–10. [PubMed: 15358437]
  22. Affleck G, Tennen H. Construing benefits from adversity: adaptational significance and dispositional underpinnings. *J Pers* 1996 Dec;64(4):899–922. [PubMed: 8956517]
  23. Park CL, Cohen LH, Murch RL. Assessment and prediction of stress-related growth. *J Pers* 1996 Mar;64(1):71–105. [PubMed: 8656319]
  24. Zoellner T, Maercker A. Posttraumatic growth in clinical psychology - a critical review and introduction of a two component model. *Clin Psychol Rev* 2006 Sep;26(5):626–653. [PubMed: 16515831]
  25. Folkman S, Moskowitz JT. Positive affect and the other side of coping. *Am Psychol* 2000;55(6):647–654. [PubMed: 10892207]
  26. Manne S, Ostroff J, Winkel G, Goldstein L, Fox K, Grana G. Posttraumatic growth after breast cancer: patient, partner, and couple perspectives. *Psychosom Med* 2004 May–Jun;66(3):442–454. [PubMed: 15184709]
  27. Young JM, McNicoll P. Against all odds: positive life experiences of people with advanced amyotrophic lateral sclerosis. *Health Soc Work* 1998 Feb;23(1):35–43. [PubMed: 9522202]
  28. Moore AD, Stambrook M. Coping strategies and locus of control following traumatic brain injury: relationship to long-term outcome. *Brain Inj* 1992 Jan–Feb;6(1):89–94. [PubMed: 1739858]

29. Santavirta N, Kettunen S, Solovieva S. Coping in spouses of patients with acute myocardial infarction in the early phase of recovery. *J Cardiovasc Nurs* 2001 Oct;16(1):34–46. [PubMed: 11587239]
30. Folkman S. Positive psychological states and coping with severe stress. *Soc. Sci. Med* 1997 Oct;45(8):1207–1221. [PubMed: 9381234]
31. Moskowitz JT, Folkman S, Collette L, Vittinghoff E. Coping and mood during AIDS-related caregiving and bereavement. *Ann Behav Med* 1996;18:49–57.
32. Gross JJ, Levenson RW. Hiding feelings: the acute effects of inhibiting negative and positive emotion. *J. Abnorm. Psychol* 1997 Feb;106(1):95–103. [PubMed: 9103721]
33. Gross JJ. Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 2002 May;39(3):281–291. [PubMed: 12212647]
34. Ochsner KN, Bunge SA, Gross JJ, Gabrieli JD. Rethinking feelings: an FMRI study of the cognitive regulation of emotion. *J Cogn Neurosci* 2002 Nov 15;14(8):1215–1229. [PubMed: 12495527]
35. Beck AT. Cognitive therapy. A 30-year retrospective. *Am Psychol* 1991 Apr;46(4):368–375. [PubMed: 2048795]
36. Beck AT. The past and future of cognitive therapy. *J Psychother Pract Res* 1997;6(4):276–284. [PubMed: 9292441]Fall
37. Beck AT, Rush AJ. A cognitive model of anxiety formation and anxiety resolution. *Issues Ment Health Nurs* 1985;7(1–4):349–365. [PubMed: 3854016]
38. Butler AC, Chapman JE, Forman EM, Beck AT. The empirical status of cognitive-behavioral therapy: a review of meta-analyses. *Clin Psychol Rev* 2006 Jan;26(1):17–31. [PubMed: 16199119]
39. Rush AJ, Beck AT. Cognitive therapy of depression and suicide. *Am J Psychother* 1978 Apr;32(2):201–219. [PubMed: 677351]
40. Brown KW, Ryan RM. The benefits of being present: Mindfulness and its role in psychological well-being. *J Pers Soc Psychol* 2003;84(4):822–848. [PubMed: 12703651]
41. Goldstein, J. *One Dharma: The emerging western Buddhism*. New York: Harper San Francisco; 2002.
42. Nelson TO, Stuart RB, Howard C, Crowley M. Metacognition and clinical psychology: A preliminary framework for research and practice. *Clinical Psychology and Psychotherapy* 1999;6:73–79.
43. Bishop SR, Lau M, Shapiro S, et al. Mindfulness: A Proposed Operational Definition. *Clinical Psychology : Science and Practice* 2004;11(3):230–241.
44. Shapiro SL, Carlson LE, Astin JA, Freedman B. Mechanisms of mindfulness. *J Clin Psychol* 2006 Mar;62(3):373–386. [PubMed: 16385481]
45. Hayes SC, Wilson KG. Mindfulness: Method and process. *Clinical Psychology: Science and Practice* 2003;10(2):161–165.
46. Mipham, S. *Turning the mind into an ally*. New York: Riverhead Books; 2003.
47. Mipham, S. *Taming the mind and walking the bodhisattva path*. Halifax, NS: Vajradhatu Publications; 2000.
48. Thrangu, K. *The practice of tranquility and insight. A guide to Tibetan Buddhist meditation*. New York: Snow Lion Publications; 1993.
49. Goldstein, J. *The experience of insight: A natural unfolding*. Santa Cruz, CA: Unity Press; 1976.
50. Trungpa, C. *Shambhala: The sacred path of the warrior*. Boston: Shambhala Publications; 1985.
51. Fresco DM, Moore MT, van Dulmen MH, et al. Initial psychometric properties of the experiences questionnaire: validation of a self-report measure of decentering. *Behav Ther* 2007 Sep;38(3):234–246. [PubMed: 17697849]
52. Gross JJ, John OP. Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J Pers Soc Psychol* 2003 Aug;85(2):348–362. [PubMed: 12916575]
53. Coffey K, Hartman M. Mechanisms of action in the inverse relationship between mindfulness and psychological distress. *Complementary Health Practice Review* 2008;13(2)
54. Salovey, P.; Mayer, JD.; Goldman, S.; Turvey, C.; Palfai, T.; Pennebaker, JD., editors. *Emotional attention, clarity, and repair: Exploring emotional intelligence using the trait meta-mood scale*. Washington, D.C: American Psychological Association; 1995. *Emotion, disclosure, and health*
55. Jha A, Krompinger J, Baime M. Mindfulness training modifies subsystems of attention. *Cognitive, Affective, and Behavioral Neuroscience* 2007;7(2):109–119.

56. Fan J, McCandliss B, Somer T, Raz A, Posner MI. Testing the efficiency and independence of attentional networks. *J Cogn Neurosci* 2002;14(3):340–347. [PubMed: 11970796]
57. Miyake A, Friedman NP, Emerson MJ, Witzki AH, Howerter A, Wager TD. The unity and diversity of executive functions and their contributions to complex “frontal lobe” tasks: A latent variable analysis. *Cognit Psychol* 2000;41(1):49–100. [PubMed: 10945922]
58. Corbetta M, Shulman GL. Control of goal-directed and stimulus-driven attention in the brain. *Nature Reviews: Neuroscience* 2002;3(3):201–215.
59. Kok A, Ridderinkhof KR, Ullsperger M. The control of attention and actions: Current research and future developments. *Brain Res* 2006;1105(1):1–6. [PubMed: 16631144]
60. Chambers R, Lo BCY, Allen NB. The impact of intensive mindfulness training on attentional control, cognitive style, and affect. *Cognitive Therapy and Research*. 2007 February 23;
61. Isen AM. Positive affect, cognitive processes, and social behavior. *Advances in Experimental Social Psychology* 1987;20:203–253.
62. Fredrickson BL, Branigan C. Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion* 2005;19(3):313–332.
63. Rowe G, Hirsh JB, Anderson AK. Positive affect increases the breadth of attentional selection. *Proc Natl Acad Sci U S A* 2007 Jan 2;104(1):383–388. [PubMed: 17182749]
64. Kabat-Zinn J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *Gen Hosp Psychiatry* 1982;4:33–47. [PubMed: 7042457]
65. Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self-report assessment methods to explore facets of mindfulness. *Assessment* 2006 Mar;13(1):27–45. [PubMed: 16443717]
66. Garnefski N, Kraaij V. The cognitive emotion regulation questionnaire: Psychometric features and prospective relationships with depression and anxiety in adults. *European journal of Psychological Assessment* 2007;23:141–149.
67. Garland EL. The meaning of mindfulness: A second-order cybernetics of stress, metacognition, and coping. *Complementary Health Practice Review* 2007;12(1):15–30.
68. Teasdale JD. Metacognition, mindfulness, and the modification of mood disorders. *Clinical Psychology and Psychotherapy* 1999;6:146–155.
69. Watts, A. *The way of Zen*. New York: Pantheon Books; 1957.
70. Watts, A. *Psychotherapy East & West*. New York: Random House; 1961.
71. Bateson, G. *Steps to an ecology of mind*. Chicago: The University of Chicago Press; 1972.
72. Vygotsky, LS. *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press; 1978.
73. Depraz, N.; Varela, F.; Vermersch, P. *On becoming aware*. Philadelphia: John Benjamins North America; 2003.



**Figure 1.**  
The Mindful Coping Model (Garland)