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MINDFULNESS, EMOTION REGULATION, AND SOCIAL THREAT

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and J. David Creswell*

Mindfulness (and mindfulness training interventions) are consistently and robustly linked with alterations in markers of emotional experience (Chambers, Gullone, & Allen, 2009), leading many researchers in social psychology and related fields to posit that emotion regulation processes may be a key mechanism underlying mindfulness outcomes (Brown, Ryan, & Creswell, 2007; Hölzel et al., 2011). To describe just a few of these effects, mindfulness training interventions have been shown to decrease anxiety for those with social/generalized anxiety disorder, prevent depressive relapse in at-risk patients, and improve mood in healthy populations (Desrosiers, Vine, Klemanski, & Nolen-Hoeksema, 2013; Goldin & Gross, 2010; Hölzel et al., 2013; Kuyken et al., 2008; Quaglia, Brown, Lindsay, Creswell, & Goodman, 2014). In this chapter we consider this important topic of mindfulness and emotion regulation, first summarizing a comprehensive contemporary model of emotion regulation processes (Gross, 1998) and then discussing how mindfulness may impact these emotion regulation processes. Specifically, we will unpack an account positing that mindfulness affects attentional deployment (how one attends to emotional stimuli), which in turn impacts emotion processing and emotion-related responses over time. We conclude the chapter with a consideration of how these mindfulness-emotion regulation effects may impact a broad range of social threat responses of relevance to social psychology.

What is emotion regulation and how might mindfulness impact it?

Emotions can be beneficial when they facilitate social interactions, bring our attention to key features of the environment, and enhance our ability to remember specific events. However, emotions can also be a detriment to our social interactions, attention, and memory when they are the wrong type, intensity, or duration, or

when we cannot regulate them effectively to meet the demands of a situation. In his popular model of emotion regulation, Gross (1998) delineates the processes that must occur to successfully regulate one's emotions over time, moving from situation selection to situation modification, attentional deployment, cognitive change, and response modulation. According to the model, one may employ *situation selection* by approaching or avoiding certain people, places, or objects. Once exposed to an emotional situation, one can then modify the situation so as to alter its emotional impact (termed *situation modification*). Next, *attentional deployment* refers to which aspect of a situation a person focuses on. A common form of attentional deployment is distraction, which focuses attention on another aspect of the situation or away from the situation altogether. By contrast, to preview an idea we develop in this chapter, initial studies suggest that mindful individuals deploy their attention towards emotional stimuli (Lebois et al., 2015; Teper & Inzlicht, 2013; Vago & Nakamura, 2011). *Cognitive change* refers to modifying how one appraises a situation so as to alter its emotional significance. Last, *response modulation* pertains to directly influencing physiological, experiential, or behavioural responding. This emotion regulation process has been applied to a broad range of outcomes, such as coping with anxiety or pain (see recent reviews: Gross, 2015; Webb, Miles, & Sheeran, 2012).

How might mindfulness alter these emotion regulation processes? Mindfulness of an emotional experience involves recognizing that an emotion is present, allowing it to be there, and investigating the ongoing qualities of this emotion without judgement (e.g. body sensations, thoughts, images, and reactions). Consider the scenario of tripping and falling in a cafeteria, spilling a tray of food in front of one's peers. An individual with high levels of trait mindfulness (as measured by a number of self-report measures; Quaglia et al., 2014), or someone who has developed mindfulness through a mindfulness training program (e.g. the 8-week Mindfulness-Based Stress Reduction program), might turn his or her attention to rapidly rising and intense feelings of embarrassment, notice body sensations and thoughts from this social blunder, and maintain an open and accepting attentional stance towards these responses, instead of suppressing these feelings or turning to angry self-directed thoughts. By attending to one's emotional experience with acceptance ('mindful attention'), one is able to stay in contact with feelings of embarrassment and associated body states, perhaps noticing that they dwindle to baseline levels. As this scenario illustrates, mindfulness may foster greater attention and acceptance towards one's emotional experience, and subsequently alter one's emotional responses.

In this scenario and, we propose, in many other daily life emotion-generating experiences, mindfulness first intervenes during the attentional deployment stage when one orients towards stimuli in an accepting manner (Brown & Ryan, 2003; Kabat-Zinn & Hanh, 2009). Furthermore, we believe that the impact of mindfulness on attentional deployment feeds forward to affect each of the following emotion regulation stages, resulting in increased availability and flexibility of cognitive change strategies (i.e. regulatory flexibility) and more effective response modulation, all of which may feed back to affect future situation selection and modification. Figure 6.1 depicts how mindfulness putatively affects the emotion regulation process.

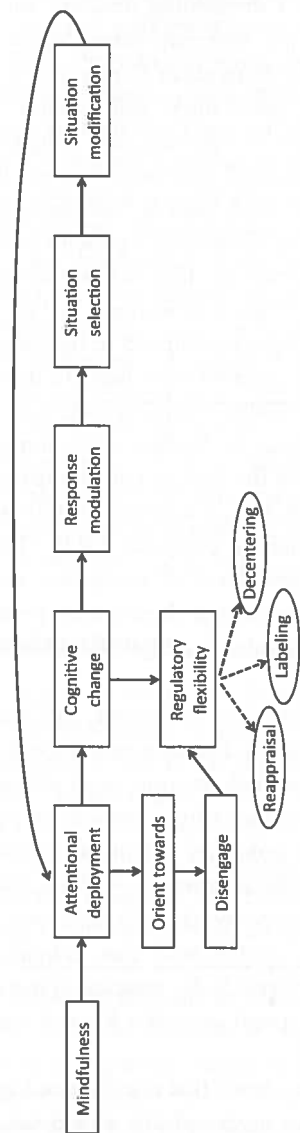


FIGURE 6.1 A conceptual model depicting how mindfulness (and mindfulness training interventions) affect the emotion regulation process (Gross, 1998, 2015)

Mindfulness and attentional deployment: Early attention to threat

Attentional deployment is the emotion regulation process of directing attention toward or away from specific stimuli in order to influence emotional responding. When confronted with a threatening situation, such as giving a presentation or being interviewed for a job, one may either deploy attention towards feelings of stress and anxiety or away from them (Gross, 2015). We consider the available empirical evidence linking mindfulness and emotion regulation processes with threat stimuli to suggest that mindfulness can influence attentional deployment as early as within a few hundred milliseconds (ms) (Brown, Goodman, & Inzlicht, 2013; Teper & Inzlicht, 2013; Vago & Nakamura, 2011). For example, after 8 weeks of mindfulness training, fibromyalgia patients oriented their attention more toward pain-related word threats, an effect that was observed 100ms after presentation of the threat stimulus (Vago & Nakamura, 2011). Furthermore, when threat stimuli were displayed for 500ms, participants in the mindfulness training condition (relative to the age-matched controls) were faster to disengage their attention from threat. This suggests that mindfulness training reduces both avoidance of threat and elaborative processing of threat. In another study, long-term meditators oriented towards error commission on the Stroop task; compared to non-meditators, they showed a greater neurophysiological response at 100ms as measured using error-related negativity, an event-related potential (ERP) (Teper & Inzlicht, 2013). The meditators also reported higher levels of acceptance and made fewer errors, providing evidence that early attentional deployment toward emotional stimuli may improve cognitive processing outcomes (see also Elkins-Brown, Teper, & Inzlicht, Chapter 5 in this volume).

In recent work, we describe the dissociable and interactive effects of the two basic components of mindfulness: attention monitoring and acceptance (Lindsay & Creswell, 2017). We suggest that training one's attention to monitor present-moment experience, the 'monitoring' component of mindfulness, may be an important mechanism that enhances orienting towards momentary emotional stimuli very early in the attention process (~100ms). Notably, early effects on the attention network (Attention Network Task) have been observed behaviourally in several mindfulness training studies, such that individuals showed improvements in conflict monitoring after brief, 5-day training (Tang et al., 2007), and improvements in orienting towards spatial cues after 8-week training (Jha, Krompinger, & Baime, 2007).

Not only is there initial evidence that mindfulness fosters early attention orienting to threat, but studies have suggested that mindfulness can modulate attentional responses after initial orienting. Prior work provides evidence that high levels of trait mindfulness are associated with a lower neurophysiological response (lower amplitudes during late positive potential, an ERP) to threat (and pleasant images) at 400–500ms (Brown et al., 2013). Acceptance may be key in facilitating disengagement with emotional stimuli. Mindful individuals bring a non-judgemental

acceptance to moment-by-moment experiences, which may allow them to 'let go' from any valence attached with the emotional experience as they continue to attend to new arising present-moment experiences.

In summary, initial studies have shown that mindfulness aids in orienting towards negative stimuli at ~100ms, and that mindfulness assists in modulating one's attentional response to negative stimuli at ~500ms (Brown et al., 2013; Teper & Inzlicht, 2013; Vago & Nakamura, 2011). Prior to this important work, there was very little consideration about how mindfulness might impact early attention processes (within the first half-second); our review of these initial studies suggests that mindfulness may have a number of important modulatory roles. First, mindfulness facilitates immediate engagement and orienting towards emotion-relevant information in the first ~100ms, and subsequent disengagement around 400–500ms. We still know little about the nature and mechanisms of how mindfulness might have such early attention effects (though we have offered initial theorizing about attention monitoring and acceptance playing important roles in these early attention deployment effects). Moreover, few studies have investigated the effects of mindfulness on early attention to positive stimuli (Brown et al., 2013). However, because attention monitoring presumably facilitates engagement with momentary stimuli, and acceptance allows for disengagement with these stimuli, we suspect that mindfulness will similarly modulate attention to positive and negative stimuli. In the next section, we discuss the implications of these early attentional modulations for subsequent cognitive change processes (cf. Gross, 1998).

Mindfulness and cognitive change

Our mindfulness-emotion regulation model (see Figure 6.1) illustrates the impact of mindfulness on attentional deployment (engaging and then disengaging with emotional stimuli) and subsequent effects on downstream emotion regulation processes, including cognitive change (Gross, 1998). Cognitive change consists of modifying appraisals of an emotion-eliciting stimulus (Gross, 2015), and there is evidence that mindfulness enhances cognitive change strategies, including affect labelling and cognitive reappraisal (Creswell, Way, Eisenberger, & Lieberman, 2007; Hölzel et al., 2013; Modinos, Ormel, & Aleman, 2010). One possible explanation that we further develop in this chapter attributes the mindful practice of monitoring ongoing emotional responses through an accepting lens towards reducing attachment and/or reactions to initial appraisals of emotion-eliciting stimuli. We propose that this effect enhances cognitive change by fostering greater regulatory flexibility (cf. Bonanno & Burton, 2013).

Recall the earlier example of feeling embarrassment after spilling food in the cafeteria. One set of maladaptive cognitive emotion regulation strategies that might occur in this situation include *suppression* of one's feelings or *rumination* on the embarrassment of making a mistake in front of one's peers. These strategies are associated with increased risk for mood disorders, such as depression and anxiety (Aldao & Nolen-Hoeksema, 2010). Mindful individuals may instead be able to

orient towards and acknowledge initial feelings of embarrassment and fear and then accept these feelings as fleeting reactions, leaving room to respond in a variety of adaptive ways. One available adaptive response is positive reappraisal, or the process of reconstructing stressful events as benign, beneficial, and/or meaningful (Garland, Gaylord, & Park, 2009). In this particular scenario, positive reappraisal may facilitate viewing the scenario as an opportunity to make light of the situation and as a funny story to share. Mindfulness might also lead to the implementation of other adaptive strategies, such as decentering. In this scenario, decentering may allow one to broaden attention to include neutral, present-moment experiences of bodily sensations and focus on the sights and sounds of the cafeteria while the feelings of embarrassment dissipate.

Additional downstream emotion regulation processes that may be impacted by the effects of mindfulness on attentional deployment include the feedback and repertoire components of emotion regulation flexibility (Bonanno & Burton, 2013). *Feedback* is described as being able to notice when a regulatory strategy is not effective, and *repertoire* refers to utilizing a range of regulatory strategies that can accommodate the contextual demands (Bonanno & Burton, 2013). Because mindfulness improves attention orienting (e.g. Vago & Nakamura, 2011), mindful individuals might also more quickly notice when a regulatory strategy is ineffective and disengage from that strategy, thus enhancing feedback. Although the speed with which mindful individuals are able to identify ineffective strategies and choose a more effective regulatory strategy has not yet been studied (to our knowledge), mindfulness has been linked with more effective use of a range of regulatory strategies. Specifically, previous studies show that individuals higher in dispositional mindfulness show greater neural regulatory responses when asked to use affect labelling or cognitive reappraisal strategies (Brown et al., 2007; Garland et al., 2009; Hölzel et al., 2011; Modinos et al., 2010). Decentering, a regulatory strategy described earlier in this section, is the process of distancing the self from present experience by perceiving thoughts, feelings, and reactions as impermanent patterns of mental activity rather than as true representations of the self, and may facilitate beneficial effects of mindfulness on affective and social outcomes (Fresco et al., 2007; Hayes-Skelton & Graham, 2013; Lebois et al., 2015). Previous research has found a link between mindfulness, decentering, and decreased negative reactivity, in that participants assigned to a mindful breathing exercise (as compared to loving-kindness meditation and progressive muscle relaxation) reported greater levels of decentering (Toronto Mindfulness Scale, decentering subscale), as well as less frequent repetitive thoughts and reduced negative reactivity to those thoughts (Feldman, Greeson, & Senville, 2010). Previous research also suggests that mindfulness improves affective outcomes through the mechanism of decentering, including social anxiety and worry (Hayes-Skelton & Graham, 2013; Hoge et al., 2013). Mindfulness and decentering may reduce negative affect by altering the objectivity with which individuals view themselves and their symptoms (Farb et al., 2007).

In this section we have provided initial considerations of the role of mindfulness in emotion regulation processes, specifically cognitive change, with a focus on

mindfulness increasing access to a broader range of cognitive change strategies and more flexible use of these strategies – which reflects greater regulatory flexibility (Bonanno & Burton, 2013). We also briefly highlighted initial evidence that mindfulness facilitates effective use of cognitive change strategies (e.g. affect labelling, reappraisal, decentering) (Creswell et al., 2007; Garland et al., 2009; Hayes-Skelton & Graham, 2013; Lebois et al., 2015; Modinos et al., 2010). We note that there is no work (to our knowledge) that directly tests whether mindfulness increases the number of regulatory strategies in one's repertoire or promotes more appropriate selection among strategies, which are important directions for future research. It may also be the case that mindfulness can promote strategic use of regulatory strategies that are sometimes considered maladaptive, such as distraction or suppression.

Selecting and utilizing regulatory strategies that are appropriate for the given situation can improve the regulation of emotion and subsequent response to emotion (Gross, 2015). In the next section, we consider evidence that explains how mindfulness might influence the selection of appropriate regulatory strategies and how this affects coping responses to stress.

Mindfulness and response modulation

If mindfulness alters the emotion regulation processes of attentional deployment and cognitive change, these alterations may affect downstream coping with an emotional situation (termed 'response modulation' by Gross, 1998). Common ways that people respond to emotionally evocative situations include the use of alcohol, drugs, food, humour, social and religious support, and emotional suppression in order to alter their feeling states (Carver, Scheier, & Weintraub, 1989). In contrast, mindfulness may turn down emotional reactivity (e.g. Arch & Craske, 2010; Broderick, 2005) and increase approach-oriented coping efforts (Weinstein, Brown, & Ryan, 2009). Research suggests that mindfulness helps individuals view demanding situations as less threatening or stressful, which facilitates more adaptive coping (Weinstein et al., 2009). Mindful individuals use fewer avoidance-oriented strategies and more approach-oriented coping strategies, and this increased use of adaptive strategies explains reductions in self-reported anxiety and improvements in well-being (Weinstein et al., 2009). We speculate that mindfulness may facilitate selection of adaptive coping strategies by buffering one's response to acute stress (perhaps through early reappraisal) and accelerating the recovery from stress (perhaps through monitoring thoughts, emotions, and sensations with acceptance), such that one does not resort to maladaptive strategies in order to placate heightened feelings of stress. Indeed, we and others have found that mindfulness buffers psychological and biological responses to acute stress (Brown, Weinstein, & Creswell, 2012; Creswell, Pacilio, Lindsay, & Brown, 2014; Nyklíček, Dijkman, Lenders, Fonteijn, & Koolen, 2014; for a review, see Creswell & Lindsay, 2014), suggesting that mindfulness may foster improved coping with stress. Furthermore, prior work provides evidence that individuals who underwent an 8-week mindfulness training reported lower levels of anxiety in the first few minutes of recovery from the

Trier Social Stress Test (a social evaluative stress task) compared to a waitlist control group, suggesting that mindfulness may accelerate recovery from stress and facilitate a return to baseline levels (Britton, Shahar, Szepeswol, & Jacobs, 2012).

We have provided initial theory and evidence suggesting that mindfulness may facilitate response modulation via modulation of coping responses to stress. In particular, mindfulness has been shown to alter stress appraisals by decreasing perception of threat, which may in turn foster use of approach-oriented coping strategies (Weinstein et al., 2009). Little research (to our surprise) has examined how mindfulness alters response modulation and coping responses to stress in healthy individuals or those who are at-risk (e.g. mood and stress-related disorders).

Mindfulness and situation selection/modification

Sometimes in anticipation of an emotional situation, we take initiative to regulate its emotional impact by avoiding or modifying the situation (Gross, 1998). Before we allow an argument with a spouse or child to escalate, we take a break from the disagreement and walk outside to cool down. Or, when watching a scary movie and a violent scene is expected to appear, we turn the volume down or look away to avoid becoming too frightened. Walking away from an argument is an example of situation selection, or taking action to reduce the likelihood that undesirable emotions will arise (Gross, 2015). Muting a scary movie is an example of situation modification, as this action alters the situation in a way that changes its emotional impact (Gross, 2015). Although little work has examined this emotion regulation process, we speculate that mindfulness may have a role in modulating situation selection and modification. Previously discussed evidence suggests that mindfulness may foster an enhanced capacity to identify a negative situation and the cognitive flexibility to decide if one has the coping resources to manage the situation. It follows that a more mindful individual might show greater foresight to enter, leave, or modify the situation to preclude a negative affective response. An intriguing prediction from this account is that mindfulness may foster greater pro-active coping prior to stressful events (Aspinwall & Taylor, 1997), such that mindfulness training helps individuals see potential stressors on the horizon and avoid them entirely. Alternatively, if a stressor is likely, then mindfulness may facilitate efforts to marshal resources in ways that mitigate the impact of the stressor. Another alternative is that mindfulness might dissuade one from taking immediate action, instead bringing focus to accepting whatever occurs in the present moment.

Research is needed to clarify the effects of mindfulness (both trait and trained mindfulness) on situation selection and situation modification outcomes. There are many possibilities for future research on this topic. In the case of situation selection, it may be that mindfulness training interventions reduce the likelihood that substance-abusing individuals visit places that are likely to act as triggers for substance use (e.g. heavy drinkers/smokers visiting bars). In the case of situation modification, mindfulness training interventions may facilitate pro-active coping efforts by students in the weeks leading up to major exams (e.g. seeking help at office

hours, forming study groups, daily exercise, regular sleep) in order to mitigate stress on exam day. Although mindfulness may encourage individuals to both approach and avoid stressful situations, we posit that mindful individuals are on average more likely to engage in these situations based on prior evidence showing that mindfulness can reduce one's perceptions of threat, and consequently reduce avoidance behaviour (Weinstein et al., 2009). Some theorists suggest that mindfulness facilitates addiction cessation and prevention by promoting acceptance, exposure, and openness (Heppner, Spears, Vidrine, & Wetter, 2015). Future research should clarify whether mindful individuals are avoiding or modifying stressful situations, engaging and coping with them, or a combination of these strategies.

Mindfulness, emotion regulation, and social threat

Social relationships provide some of the strongest emotional elicitors (Baumeister & Leary, 1995), and oftentimes high-quality social relationship functioning requires effective emotion regulation (Gross, 2002). Although initial work has investigated the effectiveness of mindfulness on buffering social threat (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Brown et al., 2012; Creswell et al., 2014; Weinstein et al., 2009), the mechanisms linking emotion regulation processes, mindfulness, and social threat are still unclear. In this section, we consider the implications of our proposed mindfulness emotion regulation framework for social threat outcomes – a topic of relevance to social psychologists.

Emotion regulation strategies must be contextually appropriate in order to be considered adaptive responses to social threat. Social anxiety disorder and other psychiatric disorders often lead to inappropriate implementation of emotion regulation strategies, such as avoidance, and therefore the negative impact of these disorders might be lessened by training that increases use of contextually appropriate strategies (Jazaieri, Morrison, Goldin, & Gross, 2015). When the threat of social situations is exaggerated, situation selection (avoidance) may be used too frequently (Andersen & Teicher, 2008). In addition, when individuals exhibit biases towards threat (or attempt to avoid threat), as well as an inability to disengage from threat, they may be using attentional deployment in a maladaptive way. Mindfulness training may decrease the use of inappropriate emotion regulation strategies and improve social threat responses, perhaps through enhancing regulatory flexibility. Previous research has found that mindfulness may reduce social anxiety through the mechanism of decentering, and that cognitive reappraisal also reduces social anxiety through this pathway (Hayes-Skelton & Graham, 2013). This suggests that changing one's perspective to monitor experiences from a distance – rather than considering each experience in relation to oneself – may help to reduce anxiety in social situations (cf. Farb et al., 2007) and subsequently improve social and romantic relationships (Carson, Carson, Gil, & Baucom, 2004). Post-event processing, something that often exacerbates anxiety, may also be reduced by mindfulness and cognitive reappraisal, leading to improvements in affect (Baer, 2003; Brown et al., 2007; Hölzel et al., 2011; Shikatani, Antony, Kuo, & Cassin, 2014).

There are several initial studies suggesting that mindfulness (and mindfulness training interventions) can foster more effective use of emotion regulation strategies and buffer social threat responses. Recent work suggests that orienting towards threat with acceptance may help explain results that high dispositional mindfulness and self-esteem are predictors of lower levels of social anxiety (Rasmussen & Pidgeon, 2010). Other research measuring the effects of dispositional mindfulness on relationship conflict in romantic couples found that those with higher levels of dispositional mindfulness reported less emotional stress (lower post-conflict anxiety and anger-hostility levels) in response to a relationship conflict discussion with their romantic partner (Barnes et al., 2007; for a review, see Karremans, Schellekens, & Kappen, 2015; Karremans & Kappen, Chapter 8 in this volume). Notably, these effects were driven by the fact that participants who were high in dispositional mindfulness entered the conflict discussion with lower levels of emotional stress. This effect suggests that one's anxiety levels prior to a stressful event affect how one regulates emotions during the stressful event. Patterns of decreased reactivity and enhanced coping over time may feed back to influence the beginning stages of emotion regulation. Consistent with these findings, we have also shown that more mindful individuals have reduced psychological stress perceptions to the Trier Social Stress Test (TSST), a difficult social stress challenge task consisting of presenting a speech and performing difficult mental arithmetic in front of an evaluative audience (Brown et al., 2012; Creswell et al., 2014). Our model provides one possible interpretation for these findings, such that orienting towards a potential threat with acceptance during the attentional deployment stage can lead to lower threat appraisals, which buffers stress reactivity and leads to more adaptive forms of coping and faster physiological stress recovery.

Social exclusion, or, the process of being ostracized from social groups, is similar to other types of social threats previously discussed in that anxiety is produced when one's social needs are threatened – in this case, the need to belong (Baumeister & Tice, 1990). Mindfulness and social exclusion has yet to thoroughly be investigated; however, initial research found intriguing results in that a brief mindfulness induction was shown to expedite recovery from feelings of distress, after participants were excluded from a game of Cyberball (a virtual game of catch) (Molet, Macquet, Lefebvre, & Williams, 2013). These results suggest that mindfulness assists the process of minimizing time spent ruminating on past pain and returning one's attention to the present moment. As we previously mentioned, mindful individuals are more likely to perceive situations as less threatening and utilize an approach-oriented coping style (Weinstein et al., 2009). We believe that this would translate well to situations involving social exclusion, in that mindful individuals would be less paralyzed by distress experienced from ostracism, and more likely to take initiative to resolve the problem, such as confronting individuals committing ostracism and resolving the issues that may be at the root of the problem. Furthermore, mindfulness may buffer feelings of social exclusion in that it alters perceptions of loneliness, which might make one more comfortable with feeling alone (cf. Creswell et al., 2012).

Discussion

This chapter has considered the ways in which mindfulness might interact with the emotion regulation process (Gross, 1998). We have proposed that mindfulness may change the way one initially deploys attention and implements cognitive change strategies (which we have discussed as increasing one's regulatory flexibility). Further, we have considered how these alterations in attention deployment and cognitive change are likely to change subsequent response modulation, situation selection and situation modification. We aimed in this chapter to highlight initial promising mindfulness-emotion regulation links and evidence, while acknowledging that we still have very little empirical research on this topic. Our proposed model builds on previous theorizing and research on core components of emotion regulation (Gross, 1998, 2015) and regulatory flexibility (Bonanno & Burton, 2013), as well as our own theorizing about how mindfulness may fit as a core process in emotion regulation. We suspect, like others (Baer, 2003; Brown, Ryan, & Creswell, 2007; Hölzel et al., 2011), that emotion regulation processes may be an important underlying mechanism linking mindfulness with a broad range of outcomes in the growing body of literature – and we have briefly considered potential links with social threat outcomes.

There are still many open questions and considerations about mindfulness-emotion regulation links. Certainly, expertise is likely to alter mindfulness-emotion regulation dynamics – researchers have posited that expert meditators have an automatic accepting stance toward their experience ('non-appraisal'), such that they may not need to implement much in the way of cognitive change (Hölzel et al., 2011). In support of this hypothesis, when experienced meditators were presented with unpleasant or painful stimuli during a meditative state (Gard et al., 2012) or a baseline state (Grant, Courtemanche, & Rainville, 2011), sensory processing regions of the brain showed greater activation, and prefrontal regions appeared to decrease in activation, representing a lack of effortful regulation (e.g. reappraisal). When beginning mindfulness practice, before an automatic accepting stance develops, mindfulness might first intervene in the response modulation stage. For example, after an emotional response has occurred, beginners in mindfulness may first attempt to reduce their reactivity by focusing on their present-moment experience as it unfolds (thoughts, feelings, sensations, breath), and then reappraise the situation. With additional practice, mindfulness may be available earlier to influence attentional deployment, as one can automatically deploy 'mindful attention', effortlessly bringing a non-judgemental and accepting awareness to an emotionally charged situation, and moving through the emotion regulation stages with less reactivity and greater regulatory flexibility. Future research is needed to investigate the relationship between levels of expertise in mindfulness and the temporal process of emotion regulation.

Conclusion

Over the last two decades, there has been a great deal of wonderful theoretical and empirical development of mindfulness and emotion regulation processes in the social psychology literature. Yet, the growth of these two literatures has occurred in

parallel, with little integration. Our hope has been to highlight potential points of synthesis, with an eye towards considering how mindfulness might impact emotion regulation processes, and in turn how these emotion regulation dynamics might help explain a broad range of outcomes.

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