All together now: Utilizing common functional change principles to unify cognitive behavioral and mindfulness-based therapies

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Abstract

Cognitive behavior therapy (CBT) and mindfulness-based interventions (MBI) have made important contributions to resolving the global burden of mental illness. However, response rates are comparatively more modest for the distress disorders. Newer CBTs enriched with MBI components have emerged with promising findings for distress disorders but with a high degree of heterogeneity and, subsequently, an unclear path for determining the unique and synergistic contributions from CBTs and MBIs. We propose that one way to elucidate and improve upon this union is to identify common overarching principles (i.e., attention change; metacognitive change) that guide both approaches and to refine therapeutic processes to optimally reflect these common targets and their interplay (e.g., sequencing and dosing).

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The global burden of mental illness is considerable (Steele et al., 2013). In Western nations, lifetime prevalence approaches 50% and most individuals meet criteria for more than one disorder (Kessler, Bergland et al., 2005). Fortunately, effective and lasting relief can result from cognitive behavioral therapy (CBT; e.g., Beck, 2005). Over the past 50 years, no other psychosocial intervention has received as much empirical examination and accumulated as much evidence of efficacy (e.g., Chambless & Ollendick, 2001). From a separate tradition, mindfulness meditation-based interventions (MBIs), derived from Buddhist mental training exercises, but presented in a secular manner have proliferated (e.g., van Dam et al., 2017) with demonstrated efficacy (e.g., Goyal et al., 2014; Hofmann, Sawyer Witt, & Oh, 2010).

Despite their efficacy, response rates are somewhat uneven across mood and anxiety disorders—especially the distress disorders (Watson, 2005) which consist of major depressive disorder (MDD) generalized anxiety disorder (GAD), post-traumatic stress disorder, and dysthymic disorder. Distress disorders can be best characterized by prolonged internal suffering that can range from self-focused processing of negative emotions and stressors, to highly intensely aversive and prolonged emotional states (e.g., Brosschot, Verkuil, & Thayer, 2018; Mennin & Fresco, 2015). This intense emotionality is associated with attentional rigidity in processing both interoceptive and exteroceptive emotional stimuli (Clasen, Wells, Ellis, & Beevers, 2013; Etkin & Schatzberg, 2011; Mogg & Bradley, 2005; Renna et al., 2018) and negative self-referentiality including worry, rumination (Mennin & Fresco, 2013; Ottaviani et al., 2016), self-criticism (e.g., Blatt, 1995) and loneliness (i.e., perceived social isolation; S. Cacioppo

et al., 2015; Eisenberger & Cole., 2012), which is associated with habitually inflexible and dysfunctional behavioral responses (e.g., Ferster, 1973), deficits in reward sensitivity (e.g., Bogdan & Pizzagalli, 2006; Forbes, Shaw, & Dahl, 2006), and aversive stimulus generalization (e.g., Lissek, 2012).

These core features of distress disorders excessive emotionality (e.g., Olatunji, Cisler, & Tolin, 2010) and negative self-referentiality (e.g., Michalak et al., 2011; Watkins et al., 2011) complicate treatment response. Distress disorders evidence comparatively inferior acute and enduring response with CBTs (Borkovec & Ruscio, 2001; Cuijpers et al., 2010a; Cuijpers et al., 2010b; Steenkamp et al., 2015). MBIs also evidence unevenness in preventing relapse of MDD (e.g., 3+ versus >3 lifetime episodes; e.g., Segal et al., 2010) and comparatively weaker acute treatment effects for GAD and MDD (Craigie, Rees, Marsh, & Nathan, 2008; Evans et al., 2008; Hoge et al., 2015; Michalak et al., 2015). Still, heartened by successful contributions from both CBT and MBI, newer treatments have emerged that combine elements of CBT and MBIs with varying degrees of prescribed daily meditation practice. On balance, these newer mindfulness-enriched CBTs demonstrate promising preliminary efficacy (e.g., Barlow et al., 2011; Hayes, Strosahl, & Wilson, 2012; Linehan, 1993; Mennin & Fresco, 2014; Roemer, Orsillo, & Salters-Pednault, 2008). Indeed, distress disorders may require comprehensive and multicomponential approached to achieve optimal and durable treatment response. Still, these newer CBTs are highly heterogeneous and complex—creating challenges to determine the unique and synergistic contributions from CBT and mindfulness principles (e.g., Hofmann & Hayes, in press; van Dam et al., 2017). Many factors require consideration when combining standalone treatments so they do not reflect a synthetic amalgamation, an impractically lengthy protocol,

or a treatment where components are delivered at a duration or intensity that ends up diluting the overall clinical efficacy. Consider the cautionary tale of the Treatment of Adolescent Depression Study, which constructed an untested conglomeration of CBT techniques that under-performed prior standalone CBTs (The TADS Team, 2007). Without a conceptual treatment development model, combining CBT with MBI is most aptly comparable to a “broad spectrum” antibiotic treatment that act against a wide range of bacteria without identifying and focally targeting the particular disorder indicators (e.g., Lee et al., 2014).

We propose that one way to effectively forge a union between CBT and mindfulness is to identify key principles and accompanying mechanisms of action that synergistically result in a superior treatment response and then determine the sequence, dosage, and tailoring of respective treatment elements. This goal is aligned with modern intervention science (e.g., Hofmann & Hayes, 2018) and NIMH priorities (e.g., Research Domain Criteria; Craske, 2012), which seek to elucidate biobehavioral markers that are reliably dissociable within patient subgroups as compared to healthy individuals and to use these markers to hone interventions to target central determinants of distress and dysfunction (e.g., experimental therapeutics; Gordon, 2017). In the remainder of this paper, we explore common CBT principles relevant to targeting the prominent features of distress disorders and then illustrate a principled approach to integration and synthesis with MBIs in hopes of optimizing treatment efficacy.

Core components of efficacious CBTs and MBIs

Despite considerable variability among CBT packages, we recently sought to emphasize commonalities of efficacious CBTs by delineating core treatment change principles that account for their salutary benefits (Mennin, Ellard, Fresco, & Gross, 2013). Although CBTs enumerate

many therapeutic processes/techniques, they utilize common processes intended to target a particular change principle, that inevitably have collateral impact on multiple change principles. These same change principles are also generally applicable to MBIs, and thus, help reveal similarities, distinctions, and potential points of synthesis. Change principles can be defined as superordinate functions for guiding both what mechanism is being targeted in a given intervention recipient as well as characteristics of the intervention that best probe that target (Hayes & Hofmann, 2018; Mennin et al., 2013; Rosen & Davidson, 2003). We have delineated three such common change principles that encompass CBTs, MBIs, and their integration.

Attention Change might be regarded as the mainstay of MBIs and reflects an effort to achieve adaptive sustaining, shifting, and broadening of attention. MBIs utilize various meditation practices including focused attention, open monitoring, body scan, and walking meditation that help individuals stabilize their minds, by anchoring attention in the body, or the breath, or cued to whatever percepts arise. Additionally, once practitioners gain proficiency at focusing this quality of attention they utilize these practices to demonstrate greater sustained attention, especially on personally relevant, distressing or difficult material. Entraining this flexible, pliant, and sustained quality of attention across various contexts and modalities of practice helps individuals develop meta-awareness (i.e., healthy self-awareness; e.g., Bernstein et al., 2015; Vago & Silbersweig, 2012). Within CBT, techniques such as cue detection and self-monitoring help individuals gain awareness of internally (e.g., emotions, thoughts, bodily sensations) and externally (e.g., overt behaviors, stimuli in the environment) generated cues (e.g., Beck et al., 1979; Ferster, 1973; Linehan, 1993).

Metacognitive Change exemplifies traditional CBT and is also emphasized in some MBIs. This principle reflects developing abilities in adaptive perspective taking on events so as to alter verbal meaning and emotional significance. The two primary mechanisms are decentering, which is a common target to both CBTs and MBIs, and reappraisal, which is only deliberately targeted within CBT. *Decentering* is defined as a metacognitive capacity to observe items that arise in the mind (e.g., thoughts, feelings, memories) with healthy psychological distance, greater self-awareness and perspective-taking (Fresco, Moore et al., 2007; Safran & Segal, 1990) and entails three interrelated processes: meta-awareness, disidentification from internal experience, and reduced reactivity to thought content (Bernstein et al., 2015). Gains in decentering have been associated with acute and enduring treatment change with CBT for patients suffering from MDD (Farb et al., 2017; Fresco, Segal et al., 2007) and social phobia (Hayes-Skelton & Lee., 2018). Decentering contributes to the salutary benefits of meditation training (e.g., Vago & Silversweig, 2012), MBIs (e.g., Bieling et al., 2012; Farb et al., 2017; Hoge et al., 2015; King et al., 2016) and mindfulness enriched CBTs (Fresco et al., 2017; Hayes-Skelton, Roemer, & Orsillo, 2013; Mennin et al., 2015, 2018; O'Toole et al., under review).

Reappraisal refers to the ability to change one's evaluation of an event so as to alter its emotional significance. Considerable evidence indicates that cognitive reappraisal is an often used and effective strategy utilized by healthy humans to reduce the affective impact of situations in one's life (e.g., Buhle et al., 2014). In the context of CBT, the most commonly utilized therapeutic technique targeting reappraisal is called cognitive restructuring where patients are taught to identify thoughts that arise in the mind to see how they may be impacting one's interpretations of personally relevant situations. Therapist helps clients

challenge unrealistic or unhelpful interpretations through logical questioning, identification of cognitive “distortions” (i.e., interpretations that are not based on logic), and encourage clients to generate new possible meanings that are more rational and realistic (e.g., Beck et al., 1979).

Context Engagement is possibly the hallmark of traditional CBT and refers to efforts at promoting adaptive imagining and behavioral responding to threat and reward cues. The two primary therapeutic techniques that focally target context engagement are *exposure therapy*, commonly used to promote inhibitory learning in fear and threat contexts (e.g., Craske et al., 2008) and *behavioral activation*, commonly utilized with depressed individuals to help to identify and engage contexts that are potentially rewarding and shape the behavioral responses that will result in positive reinforcement (Ferster, 1973; Lewinsohn, 1974). Collectively, these techniques seek to establish or restore an individual’s repertoire of adaptive and flexible behavioral responses to effectively respond to cues of threat and reward. Given the importance of accurately detecting cues of threat and reward and reducing the burden of internally generated negative self-referentiality, improving attention and metacognitive abilities are crucial to optimizing context engagement (e.g., Farb et al., 2015; Mennin & Fresco, 2014). However, it is not explicitly targeted in MBIs and, thus, a fuller discussion of this principle in the context of integrating CBTs and MBIs is beyond the scope of this paper.

Constructing a principled synthesis of CBT and MBI

Attention change and metacognitive change appear central to the overlap of CBTs and MBIs but their distinction is also important for understanding core elements of these approaches. For instance, attention change and metacognitive change can be differentiated by the degree of elaboration or cognitive effort needed to engage this capacity. Attention change

is commonly regarded as relatively less elaborative since flexible and sustained attention is not dependent on language or verbal representations as the focus of one's attention (Posner & Rothbart, 1992). By contrast, metacognitive change, relies on relatively more elaborative components such as working memory and verbal representations (e.g., Badre & D'Esposito, 2007) and, thus, is likely associated with greater mental effort. Some conditions may require intervention in both domains to be efficacious. Indeed, distress disorders appear to be marked by deficits in less elaborative (i.e., attention) and more elaborative (i.e., cognitive) capacities, which undermine effective context engagement (i.e., threat & reward learning; Mennin & Fresco, 2013).

Given the promising preliminary findings from mindfulness-enriched CBTs (in contrast to the relatively poorer outcomes with purer approaches; e.g., Craigie et al., 2008), psychosocial interventions imbued with attention *and* cognitive treatment processes may resolve distress disorders better than psychosocial interventions that largely emphasize only attention (e.g., MBIs) or cognition (e.g., CBTs). Combined treatments may be improving outcomes for refractory conditions by utilizing all of the change principles in their therapeutic processes that target the full dysfunctional emotional response. However, what is gained in potential bandwidth may be lost in specificity and precision. Current therapeutic processes are blunt and imprecise instruments that collaterally impact more than just the intended principle—thereby complicating efforts to determine which techniques and in what dosage are truly necessary to improve outcomes. The ability to develop precise intervention processes reflective of clear change principles is essential to determining the key ingredients of these approaches that contribute best to efficacy and to isolation of these ingredients such that our treatments are

most parsimonious yet maximally effective (Cougles, 2012; see below). Thus, an important next step in focalizing interventions is to investigate the optimal treatment characteristics (e.g., sequencing, dosing) reflective of these principles to adequately resolve intense emotionality and negative self-referentiality, and in turn, improve treatment of distress disorders.

To date, relatively more progress has been made with investigations of component sequencing. For instance, several lines of evidence, ranging from Buddhist monastic training (e.g., Lutz, Dunne, & Davidson, 2007) to contemporary lay meditation training (e.g., Lindsay et al., in press) to treatments of distress disorders (e.g., Fresco et al., 2013; Mennin & Fresco, 2014) converge in proposing that less elaborative techniques should precede and are potentially foundational for more elaborative techniques. For instance, within many of the Tibetan Buddhist traditions, practitioners learn a series of progressively more elaborative practices beginning with *focused attention*, then *open monitoring*, and then *non-referential compassion*. In this progression, more advanced practices are supported by the attention qualities that were previously cultivated in the earlier practices. Findings from the ReSource Project (e.g., Valk et al., 2017), a large-scale study of the neurobehavioral effects of meditation practice, offers complementary evidence. In this study, individuals were randomly assigned to one of three meditation practices: attention and interception skills (i.e., mindfulness), socio-affective skills (i.e., compassion), or socio-cognitive skills (i.e., meta-cognition). Participants receiving any form of meditation as compared to non-meditation controls, evidenced cortical thickening in areas of the brain associated with awareness and monitoring as well as differential neural changes more uniquely related to the practice they received (Valk et al., 2017). Post hoc analyses of the prospective cortical thickening indicated that change in areas

associated with attention preceded and may have impacted later changes in neural areas predicted to be specific to the three discrete meditation conditions in the study (Valk et al., 2017). Finally, findings from a recent MBI investigation also supports the sequencing from less elaborative to more elaborative techniques. Monitor and Acceptance Training (MAT; Lindsay & Creswell, 2017) posits that deliberately combining attention monitoring with acceptance (e.g., mental attitude of nonjudgment, openness and receptivity, and equanimity toward internal and external experiences) will produce superior cognitive and affective change. In the MAT model, training initiates with attention practices and progresses to attention + acceptance practices. Findings from a well conducted dismantling study indicate that the combination of attention and acceptance produces superior outcomes to attention alone (e.g., Lindsay et al., 2018).

Emotion regulation therapy (ERT) is one approach to combining CBTs and MBIs that addresses sequencing by targeting the refractory negative emotionality and resulting negative self-referentiality that characterizes distress disorders (Newman & Llera, 2011) by first addressing attention change techniques (e.g., cue detection, concentrating on one's breathing, body scan work; e.g., Borkovec, Newman, Pincus, & Lytle, 2002; Kabat-Zinn, 1990) to create a foundation of flexible and pliant attention to one's emotions and motivations, and then progressing to practices that support sustained attention (e.g., open presence, mindfulness of emotions; Halifax, 2009; Ricard, 2006). As attentional capacities are increasing, patients progress to learning metacognitive practices that create healthy spatial distance (e.g., Kross et al., 2012) or perspective (e.g., Kabat-Zinn, 1990) from difficult emotional material (i.e., decentering; Bernstein et al., 2015; Fresco et al., 2007). Finally, ERT patients are taught practices to promote reframing (i.e., reappraisal; Gross, 2002), which is supported by

meditation practices that cultivate courageous and compassionate alternative perspectives to difficult situations (e.g., Salzberg, 1995). All told, these principles are deliberately organized from less elaborative (i.e., attentional) to more elaborative (i.e., metacognitive) processing as a strategy to reduce the reliance on negative self-referentiality and avoidant behavioral responding (e.g., Mennin & Fresco, 2014). To date, three ERT trials demonstrate strong efficacy (Mennin et al., 2018; Mennin et al., 2015; Renna et al., 2017), the temporal sequencing of mechanism change (e.g., decentering & reappraisal) preceding clinical improvement (O'Toole et al., under review), and changes in neural markers consistent with the ERT conceptual model (Fresco et al., 2017; Raab et al., under review; Scult et al., under review; Seely et al., under review). Taken together, these ERT findings are promising but preliminary in terms of providing a more efficacious treatment response for the distress disorders.

In summary, with the goal of optimizing treatment for refractory conditions such as the distress disorders, we have endeavored to offer a principled and evidenced based approach to the synthesis and integration of CBT with MBI. At least for the distress conditions, the combination of less elaborative followed by more elaborative treatment processes appears to provide a more efficacious treatment response. Still, at least three important questions remain unanswered. First, what is the optimal relative dose of attentional and cognitive interventions needed to provide the most synergistic treatment response? One promising way to potentially address issues of dosing for a particular intervention or even for a particular individual within an intervention is to utilize sequential, multiple assignment, randomized trial (SMART) methodologies (e.g., Collins, Nahum-Shani, & Almirall, 2014). Second, we have focused on a set of meditation techniques categorized as mindfulness practices. However, the family of

meditation practices extends beyond the largely attentional techniques. Practices such as loving kindness meditation (e.g., Salzberg, 1995) and compassion meditation (e.g., Gilbert, 2010) derive from the same Buddhist monastic tradition and have received empirical attention are relatively more cognitively elaborative. An important future direction will be to elucidate how best to integrate these meditation practices to create a principled and potentially more efficacious intervention. Finally, future work will also need to examine optimal ways of infusing techniques associated with not only principles of attention and metacognition but also their synergistic relationship with the principle of context engagement (i.e., exposure and behavioral activation) so as to understand fully the potential ameliorative characteristics of these combined treatments and refine them to produce the most efficacious treatment outcome possible (e.g., Bar, 2009; Treanor, 2011).

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