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Mapping, Meeting and Modulating Stress and Emotion: Combining Mindfulness and the Workable Ranges Model

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Abstract

This article examines the practice of combining explorations of regulated and dysregulated states through the Workable Ranges Model (WRM) with the skills and qualities taught in Mindfulness-Based Stress Reduction (MBSR). MBSR was designed to help participants to self-regulate stress. Didactic teaching about stress reactivity is part of the curriculum and may contribute to positive outcomes. A practice-based embodied methodology utilised mindful inquiry in research methods. Seven graduates of MBSR courses that included the WRM became conceptual encounter research partners. Following a re-presentation of the WRM, data were gathered through a diagrammatic diary exercise, post-meditation inquiry and a group discussion. Reflexive thematic analysis identified an overarching theme that the WRM was a dynamic map for exploring stability and stress. Two non-hierarchical themes articulated interrelated self-reflective activities associated with using the WRM as a map. Mapping involved charting regulated and dysregulated embodied experience. Meeting was the embodied application to mindfulness practice. Modulating states through intentional orienting to and resourcing mindful self-regulation and self-care grew out of the mapping and

meeting practices. The WRM provided a form and set of words to name mind-body states, and to develop and apply insights about them. The WRM was used to shape new meanings about the relationship between mindfulness and regulated and dysregulated experience. This is theorised through its connection with embodied metaphors. The combination of the WRM and mindfulness worked to frame and progress mindful self-regulation. The WRM may be a valuable resource for mindfulness teachers to support self-regulation and mental health.

Keywords
Mindfulness-based stress reduction; workable ranges model; self-regulation; emotion regulation; qualitative; embodied first-person research; pedagogy

1. Introduction

This article examines the practice of combining explorations of regulated and dysregulated states through the Workable Ranges Model (WRM) with the skills and qualities taught in Mindfulness-Based Stress Reduction (MBSR). The WRM is a visual tool used to convey the relationship between healthy, balanced mind-body states and dysregulated or stress-related states, to support the development of self-regulation skills [1].

Emotion regulation and dysregulation provide an integrative framework for understanding and treating mental health conditions [2]. The capacity to regulate stress and emotion is essential for good mental health [3]; whilst dysregulation is a feature of many mental health conditions [4]. Interventions that improve emotion regulation are efficient transdiagnostic strategies for mental health problems [5]. MBSR was designed to teach meditation skills and qualities to a wide range of people to improve their self-regulation [6]. Kabat-Zinn [7] linked the intervention with social-cognitive models of self-regulation such as Bandura [8], and with mind-body systemic theories about mindfulness enhancing homeostasis [9]. Managing stress and emotion is the main motivator for participation in mindfulness-based programmes [10].

By developing body awareness and curiosity about mind-body states, MBSR participants learn to tolerate and appraise stressful experiences differently and choose 'mindfulness-mediated stress responses' Kabat-Zinn [7]. These practices differentiate mindful emotion regulation from cognitive appraisal based self-regulation [11]. Interoception and sensory awareness bring feeling level, bottom-up features to emotion regulation that inform and enrich top-down regulation through cognitive appraisal [12]. Mindful body-awareness is a key mechanism of action of mindfulness practice [13]. Mindful self-regulation is a trans-therapeutic mechanism of MBSR likely to be beneficial across a spectrum of psychological and general health problems [14].

Increases in measured mindfulness following MBSR indicate that meditation and yoga practices are central to positive emotion regulation effects [15] and physiological stress indicators [16]. However, didactic teaching may also contribute to positive outcomes [17]. Features of mindfulness can be developed by psychoeducation and non-mindfulness interventions [18, 19]. Teaching about stress physiology is in the MBSR curriculum to enable participants to apply mindfulness to daily stresses and strains [20]. The role and effect of didactic input on stress physiology and reactions within the MBSR curriculum is rarely considered. The present study addresses this gap in the

literature by investigating an innovative method of presenting stress regulation and dysregulation in conjunction with MBSR.

The first author uses the Workable Ranges Model (WRM) within MBSR courses for higher education staff [21]. The WRM built on the autonomic arousal model used in sensorimotor trauma psychotherapy [22]. They synthesised Siegel's [23] notion of the window of tolerance and Porges' [24] polyvagal theory to position hyperaroused and hypoaroused stress reactivity around a regulated state connected with safe social-engagement. The WRM extended the theories and layout of the autonomic arousal model as a broader model of states and behaviour associated with regulated coherence and dysregulated reactivity occurring at varying degrees of intensity in everyday life, thus making it a comprehensive model relevant to the general population [1]. The polyvagal and window of tolerance theories and the related notion of emotional regulation through interpersonal and intrapersonal mindful presence have informed a range of mind-body interventions for mental health [25, 26].

In clinical and MBSR practice the essence of the theories behind the WRM are articulated diagrammatically (see Figure 1). Diagrams can expedite meaning making through combining visual and verbal information processing, thereby reducing the cognitive load and opening up therapeutic learning [27]. Firstly, the practitioner highlights workable ranges as safe, regulated states that are optimal for health, wellbeing and functioning. Two parallel horizontal lines in green depict a dynamic regulated state within upper and lower thresholds of tolerance, in which we feel and function well. The lines represent the boundaries between things being manageable and too much – over the limit of the body/mind's regulatory ability at that point. Two forms of stress and emotional dysregulation are presented as moves out of the dynamic boundaries/thresholds of the workable range. Mobilised, hyperarousal and flight and fight reactions are introduced as breaches of the upper threshold and depicted above the workable range in red. Immobilised, hypoaroused and shut down freeze reactions are described as falling below the lower threshold and are depicted in blue. Lines are drawn across the diagram from left to right to describe changes over time, with gentle waves depicting more regulated states and more pronounced ups and downs depicting dysregulation. See Rose et al. [21] for a fuller account of the teaching method.

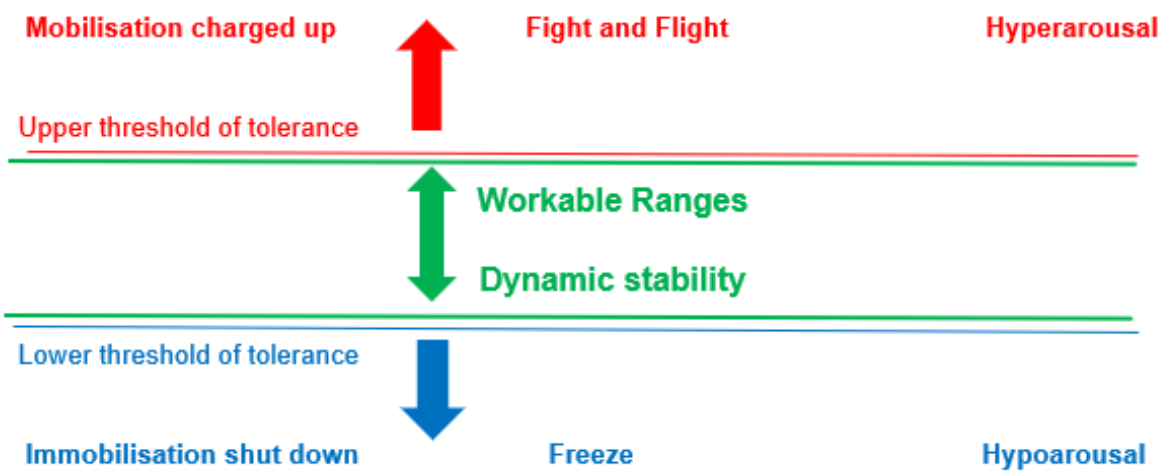

Figure 1 The workable ranges model.

The inclusion of the WRM within MBSR courses was evaluated in a qualitative study where data were collected from learning activities as part of the curriculum [21]. Following a presentation of the model, participants generated visual and written data from two reflective exercises, one after the presentation of the model in session four and another in session seven. The WRM was easily grasped and applied by MBSR participants. Under guidance from the practitioner, the diagram was used immediately to plot their current, most and least preferred states and to diagrammatically narrate a stress experience. In session four, participants observed rich details of the experience of the different states and their impact on daily functioning were described. In session seven, participants reflected on the application of mindfulness to respond to mobilised and immobilised states. Attention regulation and mindful breathing were mainly deployed with charged stress states whereas self-compassion was expressed in response to low-energy flat states. Participants valued the visual and explanatory model for normalising their different experiences of stress and making sense of common mental health difficulties. Teaching and learning with the WRM seemed to be associated with the communicative value of its graphic form functioning as an 'information map' conveying information about spatial hierarchy and relationship and by providing a template or 'guide map' for exploration by adding individual experiences [28]. The inclusion of the WRM within the MBSR curriculum provided novel learning experiences in support of the self-regulation aims of the programme, which warranted further investigation.

The purpose of the present study was to deepen the evaluation of the value of the WRM to mindful self-regulation beyond the confines of an MBSR course. The strategy was illuminate the processes through which the practice innovation might work [29]. The research question was how might the combination of the WRM and ongoing practice following MBSR support self-regulation?

2. Methods

The study was informed by a practice-based embodied methodology inspired by embodied cognition and enactivism [30] Enactivism views regulatory functions of the nervous system as physiological forms of sense-making, and adaptivity to external conditions [31]. The use of meditation as a first-person phenomenological research method for accessing embodied experiences otherwise not knowable contributed to the theory (ibid.). This first-person requires a skilled practitioner in a second-person role to enable participants to connect with and observe their embodied experience [32]. Kabat-Zinn [6] viewed MBSR participants' learning as arising from first-person investigations into their mind-body experiences guided by the teacher. The present study adopted this approach to design embodied explorations of the WRM that could generate data from meditation and experience close inquiry integral to the practice innovation. This enabled the first author to exploit her skills as a mindfulness teacher and facilitator of embodied enquiry in the role of practitioner-researcher.

Teaching the WRM was conceptualised as a phenomenological conceptual encounter [33] which it parallels. Conceptual encounter involves a sequence of collaborative activities with a researcher presenting conceptualisations of emotional phenomena to research partners who relate them to their own experiences. A key question of conceptual encounters is whether conceptualisations enable people to gain useful gain insights about their experiences [34]. The inquiry process in MBSR was integrated into the method. It facilitates vertical interaction between the participant and the

teacher about their first-person experiences, and horizontal interaction to explore resonance, similarities and differences across the group [35].

The University of Derby Health and Social Care Ethics Committee gave ethical approval for the study. The practitioner-researcher complies with the good practice guidelines of the British Association of Mindfulness-Based Approaches [36].

2.1 Research Partners

Graduates of an MBSR course that included the WRM were recruited as first-person researchers and conceptual encounter research partners (RPs). Invitations to attend an experiential workshop and to contribute to research were sent to 240 course graduates. The self-selection criteria were ongoing interest in mindfulness and the WRM. The sample of seven RPs was determined by availability to attend two workshops a week apart. It comprised four women and three men. Six RPs held professional or managerial roles and one had a customer service role.

2.2 Practice-based Data Collection

Data were collected in practice activities led by the practitioner-researcher at three points, a bespoke question schedule in the introductory session, diaries over the following week and two group discussions in a mindfulness-based workshop – see Table 1.

Table 1 Overview of practice-based data collection.

	Day one	Intervening week	Day two	
Research activity	Introductory session 1 hour	Self-monitoring	Two-part mindfulness-based workshop 2 hours	
Detail	Induction to research partner role. Refresh presentation of the WRM. Shared directed reflection	A workable ranges tracking form, a one week and a single day WRM diagrammatic diary sheet	Guided meditation (20 minutes) and recorded inquiry group reflection (20 minutes)	Phenomenological focus group
Data gathered	Diagrams and brief written responses	Diagrams and brief written responses	Recorded inquiry group reflection Assistant's notes	Recorded group discussion

The form of the WRM was used to elicit diagrammatic data with the potential to capture non-verbal and emotional information [37]. An assistant moderator helped with the practicalities of recordings and took notes during the workshop. The introductory session inducted the RPs to their first-person research roles and framed the activities as a shared mindfulness-based conceptual encounter that merged their learning with the research. A brief re-presentation of the WRM was followed by an interactive exercise in which RPs used a short question schedule with an outline

WRM diagram to depict their workable range, where they were at that moment, their most preferred and least preferred states and to describe a recent stressful experience on the diagram and/or in words. They were encouraged to observe their experiences of balance and stress over the following week and given WRM diagrammatic diary sheets to record them.

All seven RPs returned the following week with their diary sheets to attend a two-part mindfulness-based workshop**.** The workshop began with a guided mindfulness practice focusing on the body, and breathing meditation followed by a recorded structured inquiry. The inquiry questions concerned observations of energy and feelings of stress or emotional balance/imbalance and changes in the quality of your attention during the practice. After a short break, the recorded semi-structured group interview covered four key topics: 1) Observations from the question schedule and diary sheets from the preceding week, 2) Experiences in the preceding guided meditation, 3) Other experiences in mindfulness practices and 4) Views about the interplay between learning and practising mindfulness and their knowledge of the WRM.

2.3 Reflexive Thematic Analysis

In reflexive thematic analysis, researcher subjectivity and reflexivity is central to analysis and not a limitation [38]. Diagrams were scanned, the written data from the diaries reproduced retaining their contextual form, and audio data were transcribed. Braun and Clarke's [39] systematic framework for thematic analysis structured the coding and identification of patterns. The intention was to generate themes related to the practice-based question inductively following Braun and Clarke's six-step analytical process. Reflexivity was achieved through being clear about the interpretative lens informed by embodied-mind epistemology, conceptual encounter method, MBSR pedagogy, the WRM and mindful openness to novel meanings.

In the familiarisation step, the practitioner-researcher recognised that the structured inquiry following meditation and focus-group discussion data had a different quality. The inquiry data were closer to present-moment awareness of embodied states than the discussion that followed. To generate and revise codes the practitioner-researcher began with identifying first-person descriptive, data-derived codes and progressed to considering broader meanings to generate researcher-derived interpretative codes informed by her experiences as a practitioner and teacher (ibid). Many RPs reflections were individual and their elements were coded into categories. However, some larger sections of verbal data were coded together as they represented process patterns and shared lines of inquiry. This was informed by Binder et al.'s [40] analysis of therapeutic processes. For example, a group exploration regarding the impact of chronic stress on the workable range was coded as 'using the WRM as a frame to enquire into prolonged dysregulation'. Codes were combined to higher-level meanings, and were reapplied to the data set. Identification of patterns codes from line-by-line coding and ideas generated through broader contextual reflection led to candidate themes. Themes were reviewed according to how they worked in relation to extracts of data, and across the entire data set [39]. Hierarchical or sequential relationships between themes generated a thematic model with three levels. Defining the themes led to further refinements. The intention to theme direct experiences and the novelty of the topic meant that many data extracts were retained and used descriptively (ibid.). The implementation of the analytical stages were evaluated as meeting the quality criteria for thematic analysis [41].

3. Results

The overarching theme was that the WRM was used as a dynamic map and resource for the exploration of stability and stress**.** This organised the whole data set and brought together the value of the model as a tool for mindful inquiry and self-regulation. Two non-hierarchical themes articulated interrelated self-reflective activities associated with using the WRM as a map. Mapping involved charting regulated and dysregulated embodied experience. Meeting was the embodied application in mindfulness practice. Modulating through orienting to and resourcing mindful self-regulation and self-care arose from mapping and meeting practices.

3.1 Mapping: Charting Regulated and Dysregulated Embodied Experience

RPs used the WRM heuristically as 'a form, or way of knowing' (RP5) drawing on or relating their experiences to it. The vertical axes representing three different states and the horizontal axes representing time enabled a simultaneous exploration of how they felt at any point in time, and how states changed and unfolded. The spatial language and colour of the WRM was adopted to describe and explore embodied experiences, for example, 'I was heading towards the red zone' (RP3). The assistant moderator noted that RPs used gestures with one hand on top of the other to convey the variable width of workable ranges, and traced horizontal lines for changes over time, expressing an embodied adoption of the model.

In the diaries, the WRM diagram was an external reference map used to consider, plot and draw out experiences. In the group discussion, an embodied sense of the spatial and visual features sense of the model was an internal resource.

One way of charting was positioning experience on the WRM similar to putting marks on a map. The comments: 'I'd been out of range in the morning' (RP3) and 'I've been in the high end of the range this week' (RP2), illustrate this point. RPs also situated their awareness of feeling balanced in everyday life, for example, 'I was in my workable range every day, for a part of it at least' (RP4). Another charting action was tracking the crossing of thresholds of tolerance the boundary beyond which experience changes from feeling balanced to feeling out of control. 'Whenever, I did go out of range I noticed and wrote it down' (RP5). RP1 observed 'the critical moment' she crossed into a mobilised stress state, and RP4 pinpointed the transition from being 'fired up' to 'feeling balanced again'. The WRM was a means of locating and labelling experience, and a method of bringing awareness to moments of balance and of dysregulation.

The WRM was used to notice temporal sequences of changes from regulated to dysregulated states. For example, 'you can be out of range and then back in in ten minutes' Some RPs linked their location on the WRM with external contexts for example, RP2 noticed 'my range was very narrow at home and quite wide at work'.

Another form of charting was situating habits of reactivity on the WRM. RP1 explored the workable range as an optimal state and considered her habit of working at, or over, the upper threshold. 'Although I'm more comfortable and effective in the middle of the range, I tend to operate at the top end of it' (RP1). Changes to the width of workable ranges were explored such as galvanising to meet pressures as a temporary adaptation with an energetic cost. You shift into a different gear, […] because you've got to keep going. You're widening your tolerance for it at that point – widening your range. However, when it's over […] then you collapse' (RP4). RPs agreed that the higher threshold of the workable range may be raised temporarily to resource coherent

functioning at a higher level of arousal during a stressful event. However, it cannot be sustained and leads to an inevitable depletion of energy until equilibrium is restored (see panel (A) in Figure 2).

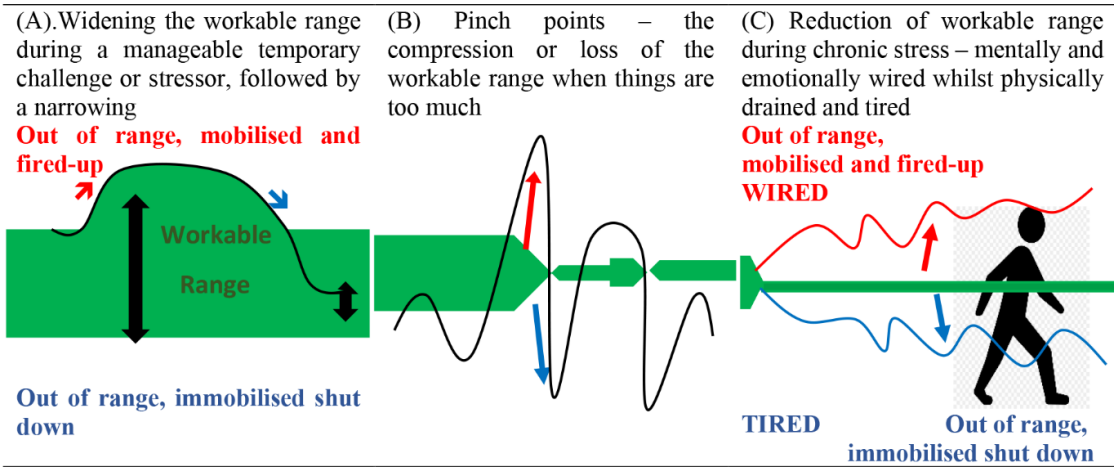

Figure 2 Depiction of RPs' findings about changes to the workable range.

Explorations of lower energy reactions differentiated ordinary tiredness, as safe immobilisation near the lower threshold, and dysregulated immobilisation below it. RP4 observed a subtle difference between comfortable tiredness and a defensive closing-in that is numbing and compromises engagement. 'It's not just tiredness; it's more of an inertia […] a lethargy with increasing disinterest'.

A probing of the fit with WRM and lived experiences concerned the transition from mobilised to immobilised stress states. RP7 observed: 'I'd be hyper and then have a big come down and be at the other end, but I didn't go through the workable range'. The transition between mobilised and immobilised states was felt as a pinch-point. The initial WRM diagram did not capture this experience. In her presentation, the practitioner-researcher drew additional lines to depict gradual narrowing of the workable range due to unchecked fluctuating dysregulation. This example, echoed by others suggested that it might also be helpful to depict the experience of a pinched, narrowed range in acute dysregulation. The researcher represented this diagrammatically (see panel (B) in Figure 2).

Another example of exploring experiences of dysregulation was a group investigation initiated by RP3 regarding a prolonged period of complex personal stressors. She wondered whether she had been out of range all the time, or if her operating span of tolerance had expanded. To facilitate first-person self-enquiry, the practitioner-researcher orientated her back to her own experience. She concluded that she had mostly been in a dysregulated state and reflected: 'My mode of operating was right up there (signaling the mobilised state with her hand). It wasn't workable but it was where I was!' Asked about her experience of other states in that period, she replied, 'Yes, I was in the low zone as well […]. Emotionally and my mind was up at the top, out of range, but my body was saying, "I'm really tired". So the body was shutting down thinking, "I can't do this anymore", and the mind was going on "no you must"!'(RP3). See panel (C) Figure 2. This first-person investigation revealed further lived details of contemporaneous mobilising and immobilising self-protective strategies, with little stability in between. Figure 2 shows the practitioner-researcher's depiction of the three discoveries RPs made about changes to their workable range, thus adding refinements to the WRM.

3.2 Meeting: Embodied Application in Mindfulness Practice

Data informing this theme came mainly from the inquiry after meditation. The theme elucidates embodied reflective practice in which RPs mindful attentional skills and attitudinal qualities learned in MBSR were applied to the WRM. Their adoption of the teaching to be present and work with the whole spectrum of experiences, is evident in this theme, as is their ambivalence about it at times. Two further themes portrayed inter-related insights through integration of the WRM with mindfulness practice. These were 'mindful presence within the workable range', and 'the interplay between mindfulness and reactivity'.

3.2.1 Mindful Presence within the Workable Range

RPs reflected on moments during the meditation in which they felt and observed a strong sense of presence and positioned them at the centre of their workable ranges. 'Being present like that, felt natural […] there was just a flow; there was nothing to think of' (RP5). 'When I'm in it, I'm really there and I'm together, but also I can get a perspective of myself, like I was standing back and so get this sense of distance' (RP6). This articulates a fullness of present-moment sensory experience, whilst also being able to observe it unfolding. Non-reactive monitoring with space for exploration was supported by attentional and emotional balance. 'It allowed me to notice all the unresolved things that have happened […] there's no urgency to go and resolve them […]. It feels as though I've got more space' (RP6). Mindful qualities, of non-judgement and non-striving, were also part of this reflection, 'the noticing was not trying to get anywhere, so letting go of the "this has to be done", or judging "this would be terrible". So it's almost like, "well stuff is just happening"' (RP7). RPs embodied feelings of being firmly in their workable ranges during meditation were connected with a presence that was spacious, flexible and supported curiosity and receptivity.

3.2.2 The Interplay between Mindfulness and Reactivity

Two features of the interplay between mindfulness and reactivity were identified: 'meeting and working with dysregulation', and 'the opening and closing of exploratory space'. They concern experiences situated at the edges of thresholds of tolerance on the borders of safety and threat.

<u>Meeting and Working with Dysregulation.</u> Having connected mindful presence with the middle of the workable range, RP5 linked starting to feel wound up as a deviation from that position. 'I noticed it when I started to move out of the middle.' When asked what that movement was, he said it was, 'Up! Towards the red.' Here we see how the WRM was applied to bring together the embodied details of experiences involving a shift in both attention and arousal connected with the dysregulating effect of irritation. When asked what that was like, he replied, 'Well, it was where I was, and I knew I was there!' Knowing his experience, as approaching the upper threshold of tolerance seemed to help him stay present with it.

Some RPs observed that mindfully meeting and working with dysregulation during the meditation practice had a calming effect. RP6 described working with distress connected with work-stress, beginning with noticing 'tension and tightness […] which made me a bit panicky, […] a sense of pressure which I tried to work through.' He observed the intensity of the emotion. 'I felt it expanding and growing in my body like the emotion was in a cage, I didn't want to let it out.'

Continuing to be mindful of the energy and emotion in his body, he noticed feeling more at ease: 'at the same time my body was relaxing.' This dual awareness of discomfort and ease led to an insight and shift in perspective: 'It wasn't the whole of me.' His movement from holding emotion in to holding it in awareness accompanied a shift in perspective, from an aversive/fearful stance to a more accepting and inwardly supportive attitude to experience on the threshold of his tolerance. RP4 described the regulating effect of an intentional kindly connection with the agitation of an acute mobilised state at the start of the practice. During breathing meditation, she described 'visualising my heart, wrapped and stroked, and it just calmed.' Her caring presence had a calming effect on her stress arousal. These two examples illustrate mindfully connecting with mobilised experiences around the threshold of tolerance. They mark shifts in intensity of and relationship to the agitation rather than an end to it. 'It's still there, but not like it was when I came in (RP4).' Two RPs experienced the physicality of underlying tiredness and strain and noticed how it changed during the practice. RP3 described 'instead of thinking, 'I feel really tired and that feels really bad" […], I just acknowledged it, said "it's ok" and I'm much calmer.' This accepting meeting with, rather than thinking about, her tiredness changed her experience. 'I'm now more comfortable with it (tiredness). These examples demonstrate how RPs transformed and regulated mobilised and immobilised dysregulated experience with mindful presence thereby increasing their tolerance of them.

The Opening and Closing of Exploratory Space. RPs applied the WRM to explore the practice of 'turning towards' unpleasant experiences they had learned in MBSR. 'When I'm in a workable range, I feel like I've got this big area, space in which I'm OK to be curious, and I'm OK to look at things that are uncomfortable' (RP5). They shared accounts of how hard it was to stay open to experiences that activated a strong threat/defensive reaction. 'But as soon as I start getting into the upper stages in the red, the space becomes (hesitates), well, I don't want to be curious' (RP5); 'I can't because, it's too close, getting curious would feel threatening, I don't want to go there' (RP6). Similar observations were made about immobilisation: 'I can't be fully with it, I'm not open to experience, and I close down' (RP6). By getting close to the lived experience of their minds and bodies organising in self-protection, RPs revealed how their edges of tolerance and mindful presence coincided at that point. They gained a felt sense of the meaning of the term workable ranges: as states with enough regulation and safety to support mindful presence, exploration and 'working with' experiences. They also became experientially familiar with the idea of a threshold of tolerance and its impact on exploratory presence. Insight into and familiarity with such shifts in state, may themselves lay the foundations and be a step towards the option of staying present.

The interplay between mindfulness and reactivity illustrated regulating effects through non-fearful openness to experience and an accepting attitude. However, when RPs' experience was on the cusp of what they could tolerate at that point, their sense of threat impeded their ability to stay present. Shared inquiry enabled reflective meaning making to remain open enough to observe the constraint on it. Overall, this theme illustrated how growing capacities for mindful reflection, combined with knowledge of the WRM, was applied to mindful self-regulation.

3.3 Modulating: Orienting to and Resourcing Regulation and Self-care

RPs insights and embodied know-how through integrating mindfulness with awareness of the states conveyed by the WRM were brought together to inform and enact shared intentional regulatory and self-care responses. These were: a rationale for regulation, justification of regulation

and self-care, embodied reading of mind-body states, stabilising and steering towards balance, enacting regulatory choices in daily life and a sense of competence and confidence in mindful self-regulation.

3.3.1 Rationale for Regulation

Mapping and meeting regulated and dysregulated states led to a WRM-informed self-regulatory approach. 'I would like to experience less extreme reactions. To acknowledge being out of range is fine, but […] I want to feel more balanced' (RP3). RP6's recognised that such an approach would involve being with feared experience. 'I've lived most of my life in a hyper place, so […] I'm more comfortable with it. I resist being 'too' relaxed because I feel too vulnerable. Yet, it is a place I want to inhabit more.' This level of insight could open the door to using mindfulness as a way to stay present with and increase tolerance of states that have previously felt threatening, but may be important and valuable for regulation and restoration.

3.3.2 Justification of Regulation and Self-care

RPs used the WRM to justify self-regulation and recognised barriers to do so in their social contexts. RP3 said, 'I know what my limitations are and what I need to do to get back into range, […]. But, I need other people to respect those. That's a hard sell, as it's a different way of working.' The rationale for regulation was used to justify setting limits and saying no. 'I'm a lot better at doing that now, cos I notice that I move to an area where I don't want to be, and which isn't good for me. (RP5)'. The WRM may enable people to resist wider social and cultural pressures that create and reinforce cycles of psychophysical dysregulation.

3.3.3 Embodied Reading of Mind-body States

Mindfulness and an embodied sense of the WRM were blended to connect with and interpret mind-body states, or in RP4's words 'switch on to what's going on.' 'I notice these way markers […]. My perception of whether I'm in range or not […] is linked to these indicators, it can be quite physical' (RP6).' Reading where you are on the WRM was likened to, 'when your stomach rumbles, you know you're hungry, you're sort of picking up the mental and emotional equivalent of it. (RP2)' Interpreting signals from the body could be 'an early warning system' (RP6) of changes that could be attended to. Increased familiarity with the bodily experience of stress was connected with valuing and trusting bodily experience. 'It has helped me get back in touch with my instincts, listening to, and responding to what your body is telling you as well as your mind' (RP2). 'If you feel scared, it's because part of you is trying to protect you […]. If I'm anxious, it's because part of me is saying: "you need to deal with this" (RP7)'. The function and meaning of stress was re-evaluated through gaining a sense of their bodies informing them of instability and danger. A new respect for bodily experience conveyed in this theme represents a shift away from negative judgements about unpleasant, or threatening, sensations of stress towards viewing them as meaningful and worthy of attention. 'I'm not mad or bad, […], these are quite normal reactions (RP1), and 'it's not right or wrong, it's just low energy (RP3).'

3.3.4 Stabilising and Steering Towards Balance

Embodied reading of the situation combined with experiences of stabilising during meditation to become self-regulation resources. 'When I'm having a stressful time, I'll do some breathing meditation' (RP6). Adopting a supportive inner voice that supported them through difficult moments was expressed by all RPs. Examples included 'it's here, and it's going to change' (RP2); 'just take a breath' (RP4) and 'give yourself a bit more time. (RP1)'. These mindful responses imbued with self-compassion are acts of intra-personal regulation and exemplify how interpersonal regulation in guided practice can be internalised.

3.3.5 Enacting Mindful Regulatory Choices in Daily Life

RPs demonstrated combining the WRM with mindfulness to enact self-regulatory actions during the week of first-person research. 'I've drunk less, spent less, […] had the confidence to take a few sensible risks, and not taken risks that were not sensible. It's been a much more level week than some, it's amazing the difference tracking it makes. (RP7)'. RP2 used meditation and other forms of self-care, to recover balance after a stressful event. 'I was in the high end all week and finally got somewhere to sit. I just stayed in, got a bath, did some meditation. It was just what my body needed.'

3.3.6 Sense of Competence and Confidence in Mindful Self-regulation

Mindfulness skills, embodied self-awareness and the monitoring changes on the WRM came together to underpin a sense of capability to recognise when dysregulated, and in being able to respond and self-regulate. 'Mindfulness helps me notice when I'm out of my workable range' (RP3). This brought awareness to moments of dysregulation and used them as the basis for responding. 'I feel as though I recognise it now (being at the lower threshold), and so have more of a chance of being able to respond' (RP4). 'You know you've got this tool, so you know that if you go out of range […] I know that it will bring me down (RP2).' RP4 reflected on how competency in self-regulation may also increase stress tolerance. 'There's sort of responding rather than reacting, when somebody or something is sending you out of range, and a generic experience of perhaps widening the range.'

3.4 Summary of Results

The combination of the WRM with MBSR practices facilitated mindful, embodied investigations and the development of personal and shared insights and actions to support self-regulation. The WRM provided a conceptual scaffold to frame mindful self-regulation and apply it in daily life. The spatial layout of the model enabled RPs to chart different states and track changes unfolding over time. The embodied practice of combining the WRM with mindfulness can be summarised as mapping, meeting and modulating mind-body states. Mapping and meeting regulated and dysregulated states were interrelated processes of mindful exploration and learning. RPS adoption of a regulatory approach and modulating actions appeared to develop out of the mapping and meeting practices. This could be due to how the practice/research activities were structured. Figure 3 is a thematic model of how the exploratory practices with the WRM and those learned in MBSR combined and worked together. The processes and practices expressed in the themes show how

conceptual and experiential knowledge of the WRM can combine with the mindfulness skills and qualities developed in MBSR to frame and progress mindfulness-based self-regulation.

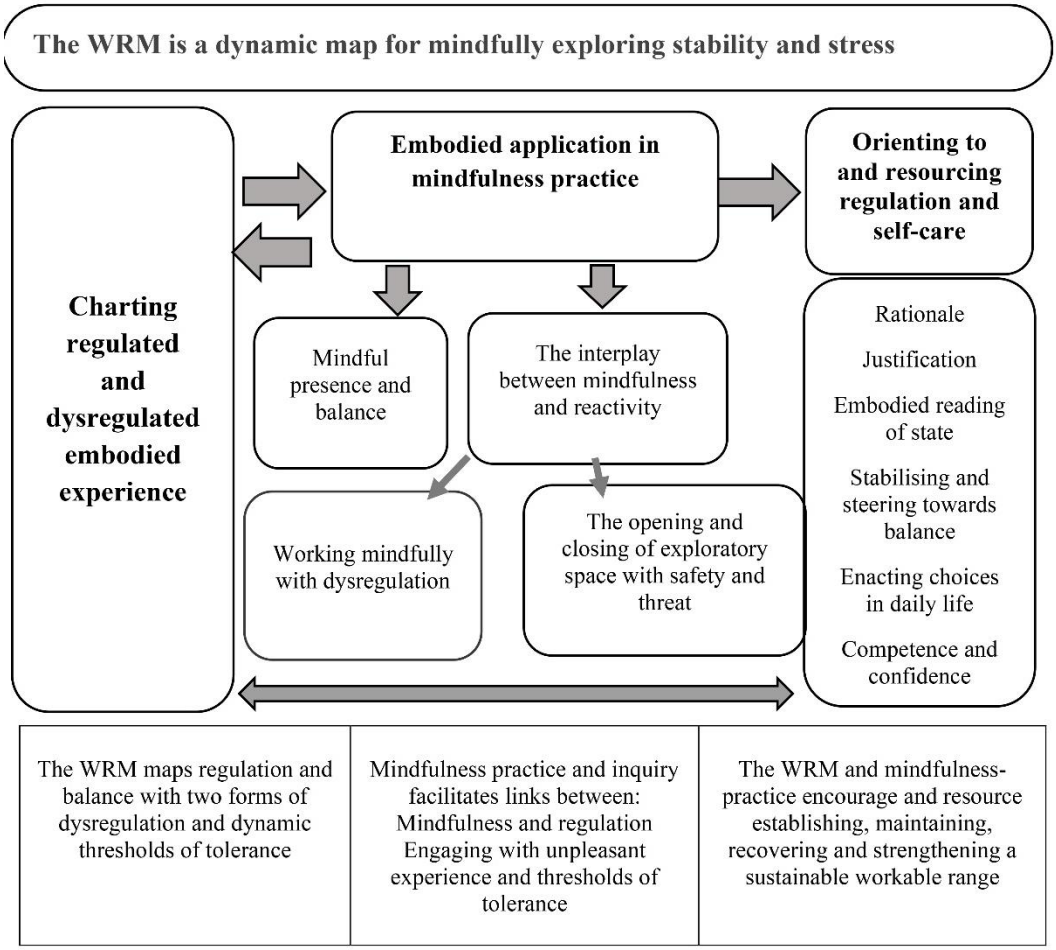

Figure 3 Thematic model of how the combination of WRM and MBSR worked together.

4. Discussion

Building on an earlier phase of research into how the WRM complements MBSR [42], this qualitative study explored how MBSR graduates applied the combination of the WRM and mindfulness to self-regulation. The WRM encapsulates and presents theories about stress and emotional regulation in an accessible way, operationalizing them for application to MBSR and clinical practice. Utilising the learning practices based on the diagrammatic form of the model in first-person data collection provided material for new methodological and theoretical knowledge.

4.1 Relevance and Contribution of Embodied Practice-based Methodology

The research was underpinned by enactivist epistemology and first-person methodology informed by it, in order to access and consider both verbal and non-verbal ways of knowing. Despite its theoretical and practical resonance with embodied mindfulness [43] it is almost absent from the literature. Phillipot and Segal [44] argued that first-person mindfulness-based investigations embedded in mindfulness programmes could potentially contribute new knowledge about the processes within them. Mathews and Anderson [45] used focussing techniques to garner nuanced,

embodied interview data about learning mindfulness. However, research in which meditation and inquiry-based learning provided the research data and illuminated change processes has not reported before and brings a novel coherence to researching mindfulness, and embodied awareness practices. The integration of the roles of mindfulness teacher with researcher and the role of training participant with research partner/first person researcher is a unique contribution. Having undertaken MBSR training, the RPs were equipped to adopt a mindful orientation to both encounter and observe their experiences of mind-body states more fully [46]. The research exemplifies the repurposing of therapeutic practices as data-collection to produce knowledge about embodied practice interventions that would not otherwise be possible.

4.2 Discussion of Results

Consideration of the interplay between didactic teaching in MBSR and the development of mindfulness-based self-regulation addresses a research gap. The results of this study illuminate innovative therapeutic practices using the WRM that can combine with mindfulness training with potential for wider application. Rose et al. [21] demonstrated how the WRM had immediate resonance with MBSR participants. Here, graduates embodied adoption of it enabled them to explore patterns of experience during mediation and in daily life. The use of the model to generate and present first-person data corresponds to McGrath's [47] analysis that mapping can function as both the process and product of sense-making. The results extend those of Rose et al. [21] in elucidating how the WRM was an informational map for locating and exploring experience, and a tool to guide and structure analytic insights that came from it [28]. This gives it practical value in both practice and research.

The WRM and mindfulness are both embodied ways of engaging with and knowing about phenomenological experience. The power of the WRM lay in its ability to facilitate connection with the felt sense of mind-states and be manipulated in embodied enquiry and representation [48]. The WRM diagram may draw on pre-linguistic spatial structures in language [49], and image schemas representing embodied sensory and perceptual experience [50]. Embodied metaphors used by RPs to describe dynamic patterns of experiences in relation to the WRM may be understood this way. For example, descriptions of being in or out of a workable range may be embedded in the embodied sense of having or losing balance. Being within or outside of thresholds of tolerance express the container schema. The representation of changes in levels of arousal upwards or downwards and timelines situating them horizontally are embodied metaphors. The ability of the WRM to resonate with the immediacy of lived experience can be theorised as evocation of image schemas, combining bodily and cognitive forms of knowing to construct embodied meanings (ibid.). These features of the WRM make it well suited to the development of body awareness as a mechanism of change of MBSR [13]. Enhancing emotional regulation through body awareness [26] has clinical relevance across physical and mental health conditions [51]. The WRM could therefore be a valuable enhancement to many mindfulness interventions and in supporting ongoing practice.

The embodied reflection practices described in the results accords with Pagis' [52] research with insight meditation practitioners. She coined the term 'embodied self-reflexivity' to differentiate internal conversations anchored in bodily sensations from solely discursive reflexivity. Mindfulness was used to monitor bodily sensations as indicators of psychological states. The WRM provided a particular form and set of words to name mind-body states, and to develop and apply insights about

them. The development of body literacy and emotional regulation found in this study echoes that discussed about Mindful Awareness in Body-Oriented Therapy which theoretical framework it shares [26].

First-person findings about acute fluctuating dysregulation helped the researcher to develop the new concept of 'pinch points' to express the sense of moving straight from mobilisation to immobilisation, and momentarily losing any sense of balance. The development of a conceptualisation indicates a successful conceptual encounter method [33]. This addition could enhance the teaching of the WRM. RPs exemplified how the WRM could shape new meanings about the relationship between mindfulness and regulated and dysregulated experience. Of note are insights about the counterintuitive gesture of welcoming and working with difficult experience, which is central to MBSR and related programmes [7, 53]. Qualitative accounts of participants experiences in mindfulness programmes include reports of reluctance to engage with difficult experience [54], and finding it harder to meditate when stressed [55]. RPs in this study applied the WRM to give meaning to such experiences and to articulate the challenge of this important aspect of MBSR, thereby succeeding in staying engaged with it. Working with meditation requires an 'intrepid willingness […] to explore the interior landscape of the mind and body' ([56], p. 342). Having the WRM as a flexible map could help with this aspect of mindfulness practice. The WRM could provide a reference to support the titrating of exposure when developing self-regulation skills and support trauma-informed mindfulness practice [57, 58].

The WRM map of healthy balance and stress was adopted as a regulatory framework that provided a rationale and justification for self-regulation and a regulation-informed approach to applying mindfulness. Linking a regulatory framework with mindfulness training accords with the theory of intentional systemic mindfulness where the regulation by body systems is enhanced by a sense of purpose for mindfulness practice based on experiences of wholeness and integration [9]. In this study, the regulatory purpose was engaged with conceptually through the WRM and linked with experiences of feeling balanced and integrated. Having an explicit regulatory framework and resources might encourage people to attend mindfulness programmes and sustain their practice afterwards.

In recognizing and accepting uncomfortable states during meditation, RPs exemplified defining features of mindful emotion regulation [11]. The WRM may bridge the development of both top-down and bottom-up emotion regulation processes by enabling recognition, and description of experience, whilst simultaneously fostering interoception and embodied self-awareness [12]. This finding could begin to explain the helpful role that conceptual teaching about stress can have within MBP pedagogy. The integration of cognitive appraisal, an established feature of coping [59], with embodied mindful awareness was evident in the results. For example, the theme 'embodied reading of the situation' reflected a coming together of bodily meaning-making which Porges [60] calls 'neuroception' and cognitive interpretation. In mindfulness-to-meaning theory, giving benign, non-threatening meanings to experience is an important factor in how mindfulness mediates emotion regulation [61]. By drawing mindful attention to positive experiences in the workable range, the possibility of consolidating regulated states may be enhanced.

This research indicates that mindful self-regulation with the WRM share features with Bandura's [8] self-regulation model. Charting and tracking experiences and behaviour on the WRM performed self-diagnostic functions, reflections on behaviour and context, and set self-regulatory actions into motion (ibid.) MBSR participants are taught to suspend automatic judgements to connect with

experience more directly. However, judgement is a central function in self-regulation, stemming from the active construction of new personal standards and values (ibid.). In their analysis of the process of change through MBSR, Hugh-Jones et al. [62] identified a process of 'detection, choice opportunity'. State changes may be detected more quickly though mindful appraisal thus affording a timely opportunity for responding. Combining the WRM with MBSR may extend and add richness to Kabat-Zinn's [7] notion of mindfulness-meditated stress responses by connecting with wider self-regulation competence.

RPs' findings support Fazekas et al.'s [63] analysis that bodily awareness and intentional body-related self-regulation contribute to a competence in aiding homeostatic/allostatic control.

Improving the self-regulation of emotion is a trans-therapeutic mechanism of mindfulness programmes that enables them to be beneficial across a wide spectrum of psychological health and general health problems [14]. The results of this study provide preliminary evidence that, by explicitly proposing a broad self-regulation framework, the WRM may also be applicable to the development of embodied self-awareness across common mental health issues, workplace stress and the management of health conditions.

4.3 Relevance and Contribution of the Study

This exploration and analysis of how the WRM supports mindfulness-based self-regulation within an embodied paradigm has theoretical and practical implications.

The study elucidated processes through which the WRM was used heuristically to map and explore embodied experience and develop insights about healthy balance and stress reactivity in the service of mindful self-regulation. The model provides a conceptual scaffold for mindful connection with mind-body patterns of healthy regulated states and dysregulation making it complementary to mindfulness programmes and related interventions. The results suggest that the merit of the WRM stems from both the accessible content about regulated and dysregulated experience, and the diagrammatic, spatial form by which it is conveyed, and, most importantly, the embodied metaphorical connection between the two. The WRM is applicable to mindfulness and embodied self-awareness interventions to support self-regulation and mental health and wellbeing. There are tensions with the use of maps and models in the MBSR approach as they can close down experiential discovery [6]. In keeping with this approach, the WRM should not be reified as definitive. In keeping with mindfulness pedagogy, practitioners and researchers would need to explore their own experiences with the WRM before they could embody and use it with mindfulness participants or clients.

4.4 Qualitative Quality and Limitations

Tracy's [64] criteria of quality in qualitative research were used from the research design through all stages of implementation. On this basis, the study was evaluated as high quality. Research set directly in a practice innovation is a 'worthy topic' and the integration of the epistemology and methodological approach with the practice provided 'meaningful coherence'. 'Ethical' procedures for the research and the practice were adhered to at all times. 'Sincerity' included transparency and reflexivity of the dual-role of practitioner-researcher role. The treatment and reporting of research-partners own first-person data provides 'credibility' relating the thickness, faithfulness and plausibility of description. The research design tested the resonant qualities of the WRM for RPs.

The analytical themes were partial dimensions and understandings of the practice investigated. The results represent dynamic snapshots of experiences that crystallised to provide credible, deep, and rich preliminary answers to the research questions. This suggests that by overlapping practice and research methods, the forms of first-person data and analytic results are potentially transferable. The criterion of 'resonance' for research reports refers to the ability of research to be related to, and identified with by others and implies the transferability or applicability of findings. Diagrams supported the conveying of embodied interpretations and aesthetic evocations of meaning providing 'resonant validity' [65]. 'Rich rigour' was provided in the design, data analysis, and the detail and variety of examples. The practitioner-researcher's skills were essential to the practice-based design and integral to the mindful conceptual encounter method. This alongside her embodied perspective was intrinsic to the reflexive analysis. However, the single sample group, setting and lone practitioner-researcher do limit this quality. Other researchers may have highlighted different meanings in the data. Given the RPs motivation and prior relationship with the practitioner-researcher established through MBSR course responses, there may have been some response bias towards positive engagement. Both second-person roles of mindfulness teacher and conceptual encounter researcher require a genuine openness to others experiences. A second group may have yielded a greater range of analytical themes. Research into mindfulness teachers' perspectives on the model and teaching processes would be valuable. Expert meditators/first-person researchers could potentially produce more detailed phenomenological data. Further iterations of the research with different population groups and in different settings could evaluate how the practice themes reported here might apply to other groups and settings and be extended. This would develop and strengthen the 'trustworthiness' of these findings.

5. Conclusion

The aims of this original practice-based research were met by shedding light on how the innovation of combining the WRM with mindfulness training worked in facilitated exploratory practice. It elucidated mechanisms by which the WRM paired with mindfulness training might interact. The WRM supported mindful mapping of the territory of regulated and dysregulated experience enabling exploration and navigation in the service of mindfulness-based self-regulation. Mindfulness provides a way of knowing embodied experience and the WRM provides an embodied conceptual map for making sense of it. The merit of the WRM lay in its ability to connect with embodied experience, facilitate embodied self-awareness, and provide a rationale and reference point for self-regulation and self-care. This was theorised through enactive epistemology and the notion of the model as an embodied metaphor. The WRM may be a valuable resource for teachers of mindfulness programmes and have wider applications in research and practice.

Author Contributions

SR designed and executed all elements of the study and wrote the manuscript. DS provided critical feedback and approved the manuscript.

Competing Interests

The authors have declared that no competing interests exist.

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