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Workable ranges model: a map and method for ‘drawing out’ embodied knowing

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ABSTRACT

We introduce the Workable Ranges Model (WRM) as a visual map and method for enacting and exploring embodied knowing about stress and emotion regulation. The WRM portrays three core psychophysical states in spatial form. Optimal and flexible regulated states are positioned centrally between two lines representing thresholds of tolerance beyond which are hyperarousal above and hypoarousal below. In developing the WRM as a method of embodied enquiry, we focus on visual techniques of mapping and time-lining. To illustrate the potential of the WRM as a map and method for ‘drawing out’ embodied knowing in research participants, we describe two phases of research in which the facilitation of first-person enquiry for therapeutic purposes doubled as data generation. We then consider how the WRM might be expanded as a research tool across fields interested in similar phenomena including occupational and health psychology, sports science, and food and nutrition. In so doing, we explore three shared methodological features of our example study: (i) visual presentation of the WRM; (ii) facilitated first-person embodied enquiry; and, (iii) multiple data-collection points. The research methods presented could have wide application to describe and understand trajectories to, and experience of, conditions affected by stress and emotion dysregulation.

KEYWORDS

Embodied enquiry;
embodied knowing; emotion
regulation; mapping;
time-lining; visual methods;
Workable ranges model

We introduce the Workable Ranges Model (WRM) as a visual map and method for enacting and exploring embodied knowing about stress and emotion regulation. Using research on the ways in which the WRM complements Mindfulness-Based Stress Reduction (MBSR) (Rose 2020), we proffer it as a novel tool for researchers and practitioners working with trajectories of lived affective experiences. Specifically, the WRM map generates information about, and can facilitate exploration of, the physical, emotional, cognitive and behavioural features of regulated and dysregulated states, and the borders between them. As such, we argue that the WRM is applicable to a wide range of settings

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and research questions through facilitating people to connect with, develop and communicate their embodied knowing.

The research was informed by the enactive approach to embodied knowing of Varela, Thompson, and Rosch (1991). In this approach mental, biological and social processes are understood to work in concert to enact and create meaning from experience and adapt to the environment (Thompson 2005). Through this lens, psychophysical experiences are known in an emergent process of sense-making involving a lived mind and body inseparable from the world it shapes and is shaped by (Stilwell and Harman 2019). This is a flexible approach that opens up possibilities for exploring the enactive, embodied, dynamic and situated nature of sense-making for qualitative researchers (Stilwell and Harman 2021). Varela, Thompson, and Rosch (1991) drew on meditation as a phenomenological method to access and reveal first-person experience. Subsequently, Pagis (2009) coined the term ‘embodied self-reflexivity’ to describe how meditation functions as an embodied way of knowing, differentiating contemplation anchored in non-verbal feeling and bodily sensations from the process of linguistic reflection. The notion of enacting embodied knowing through attending to the felt sense of experience is taken up in using the WRM to explore embodied knowing. This resonates with debates in qualitative research methods which contend that the field has emphasised discursive forms of knowing to the detriment of embodied being (Cromby 2012)) and affective processes (Gillies et al. 2005; Todres 2007).

In response, qualitative researchers are developing methodologies of embodied enquiry. For example, in the field of nursing, Wilde (2003) combined Merleau-Ponty’s foregrounding of embodiment in perception with Polanyi’s (1967) notion of tacit knowledge embedded in lived experience to conceptualise the body as a ‘silent partner’ or ‘informant.’ In this work, imagery, metaphors, writing, and drawing methods were used to orient patients to their bodily know-how of living with health conditions. Similarly, Todres (2007) viewed the lived body as a way of being and knowing, or ‘messenger of the unsaid’ (p.5), and urged researchers to employ aesthetic methods to interpret and present data evocatively through engaging the readers’ own embodied response. Despite this pioneering work, Willis and Cromby (2020) conclude that we still need to develop qualitative methods that are able to tap into and convey bodily ways of knowing.

As both Wilde (2003) and Todres (2007) demonstrate, embodied enquiry has fore-fronted visual methods of generating data. This is because bodily knowing and affective experiences can be difficult to express verbally (Reavey and Johnson 2008), and visual methods have potential to communicate knowledge that does not rely on words (Gillies et al. 2005; Kearney and Hyle 2004). Moreover, the creation and viewing of images can tap into bodily states and emotions and stimulate exploratory discussions with other people (Copeland and Agosto 2012; Glegg 2019). This is particularly so for people who, for

whatever reason, are un-practiced in verbal reflection (Duara, Hugh-Jones, and Madill 2018).

In developing the WRM as a method of embodied enquiry, we focus in particular on visual techniques of mapping and time-lining. Mapping allows participants to locate their embodied experiences and emotional states in physical space. This can be achieved in semi-literal ways, such as in the use of body diagrams (Jager et al. 2016) or more metaphorically, such as for 'state location' (Lakoff and Johnson 2008), as we will demonstrate in our WRM example below. Mapping can be conducted individually or as a group. A good example of the latter is McGrath, Mullarkey, and Reavey (2020) applied participatory mapping of relationships between people and their psychosocial environment to generate a complex representation of spatially-meaningful emotional experiences. Visual timelines generate information on changes over time, which can be critical to understanding the ebbs and flows of affect and arousal states of the body (Mazzetti and Blenkinsopp 2012; Sheridan, Chamberlain, and Dupuis 2011).

The development of the WRM and its potential applications was influenced by two developments in clinical practice: (i) embodied approaches and methods in psychotherapy; and, (ii) mindfulness-based programmes. Both facilitate embodied self-awareness and exploration by guiding people to direct their attention to physical and sensory experience, connecting with their body rather than focusing on their thoughts (Fogel 2013). Practices developed in trauma psychotherapy have been adopted across therapy modalities to train clients to become aware of and use bodily states as stabilising resources for emotional regulation (Ogden, Minton, and Pain 2006; Rothschild 2003). Similarly, mindfulness-based programmes have made a range of meditation-based self-awareness practices accessible to a wide range of people in mainstream health settings to support self-regulation (Kabat-Zinn 1990). Embodied elicitation therapeutic practices work with sensory and emotional processes that may be difficult to express in words (Tantia 2019).

Translating these techniques into research methodologies could enhance embodied enquiry and this is what we have done in developing the applications of the WRM. Specially, we have applied first-person research approaches in which participants collaborate in the generation of introspective phenomenological data guided by a researcher familiar with the practices and procedures (Petitmengin 2009; Varela and Shear 1999). Stanley (2012) has argued that guided introspection through meditation techniques could be a valuable resource for psychological research. In our example research study described below, we utilise self-awareness practices with the WRM within the conceptual encounter phenomenological method (De Rivera 1981).

The WRM was developed to expand and re-contextualise for employment settings the Autonomic Arousal Model (AAM: Ogden, Minton, and Pain 2006) used in sensorimotor psychotherapy for trauma (Rose 2014). The

AAM incorporates the polyvagal theory that links relational regulation with stress physiology (Porges 2011) and the notion of a window of tolerance (Siegel 1999). The WRM utilises an AAM diagram, which portrays three core psychophysical states of arousal in spatial form (Figure 1). Dynamic and flexible stability or optimal regulated arousal associated with psychophysical safety is positioned centrally between two lines representing thresholds of tolerance beyond which are hyperarousal above and hypoarousal below.

Interactions with clients and colleagues led the researcher to posit that the three categories of arousal (i.e., optimal, hyper, and hypo) resonated with a wider range of experiences such as the pronounced fluctuations in energy and functioning in daily life, in chronic pain and fatigue conditions, and emotional exhaustion in burnout. Hence, the WRM extended the categories of arousal to physical, emotional, cognitive and behavioural aspects of lived experience. Emphasis on the window of tolerance as the experience of a regulated zone of mind-body integration led to it being conceptualised as the optimal, healthy ‘workable range.’

The notion of workable range implicates multiple meanings of the word ‘workable’, from where we function best, what feels right, manageable and ‘works’ for us, to where experience may be ‘worked on’ for therapeutic change. The word ‘range’ refers to a dynamic spectrum spanning higher and lower energy and experiential intensity of psychophysical state. The thresholds of the workable range are breached when an individual’s capacity to regulate and orchestrate balance is lost. Hence, the WRM is a general descriptive model of stress and emotion regulation, which can model healthy balance, and mild, strong, and traumatic reactions and common mental health difficulties. As such, the WRM addresses a limitation in the understanding of stress focussing on flight and fight reactions by including optimal balance and lower arousal temporary, flattened affect and cognitive blankness often missing from the

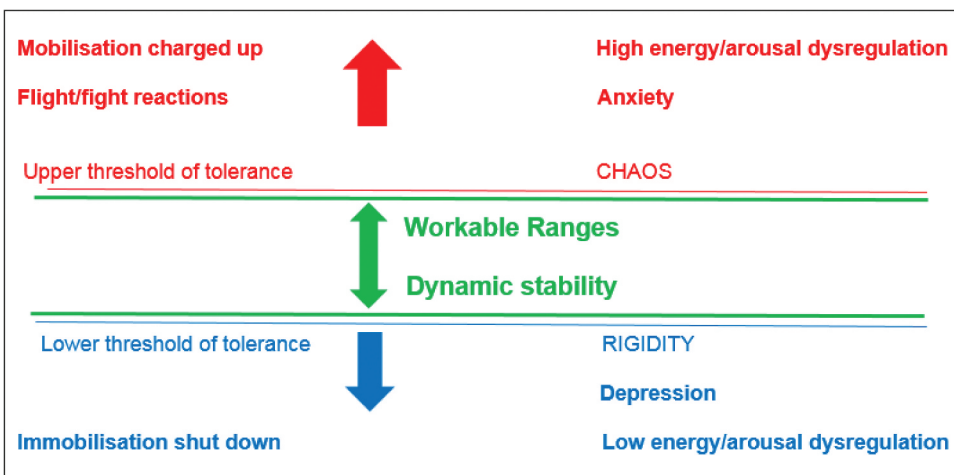


Figure 1. The workable ranges model.

stress lexicon. The central position of mind-body regulation is useful for linking optimal states for work functioning and for wellbeing.

The WRM is both a psychoeducational tool and a heuristic map and method for ‘drawing out’ embodied knowing. As a map representing the terrain of regulated and dysregulated states, it is a metaphor that appears to tap readily into embodied experience (Rose and Sheffield 2022). Just as emotion maps used in clinical practice may be applied to research emotional dynamics and repertoires (Gabb and Singh 2015), we now demonstrate how the WRM can be used as a research tool.

Example of the WRM as a map and method for ‘drawing out’ research participants’ embodied knowing as data

To illustrate the potential of the WRM as a map and method for ‘drawing out’ embodied knowing in research participants, we describe two phases of research in which the facilitation of first-person enquiry for therapeutic purposes doubled as data generation. The study was conducted as an ‘illuminative evaluation’ (Sloan and Watson 2001).) of the practice innovation of integrating the WRM with MBSR. The overall research question was how does the WRM complement MBSR?

The conceptual encounter phenomenological method (De Rivera 1981) was applied to frame first-person enquiry in the process of presenting the WRM and facilitating reflections on it. The conceptual encounter sets out a sequence of collaborative activities between a researcher and research partners in which the researcher opens up a topic of experiential enquiry and invites the research partners to explore and conceptualise the potential essence and boundaries of the experience through introspection, exempling, and dialogue. Hence, the researcher and research partners are co-investigators who together map out the phenomenological terrain of a shared human experience such as, for example, anger (De Rivera 2006). The conceptual encounter is therefore both a method of data generation and analysis and a way of gaining insight into personal experiences, which may be usable in people’s daily life (Lindsay-Hartz, de Rivera, and Moscollo 1995).

This approach matched the aims of the MBSR intervention to explore lived experiences of stress in MBSR in order to increase embodied self-awareness and support self-regulation in everyday life (Kabat-Zinn 1990), subsidiary research questions were: How well do the regulated and dysregulated states and the notion of thresholds of tolerance, presented through the WRM, fit with lived experience?; How does the WRM lead MBSR participants to gain new insights into their experiences of stress and patterns of reactivity?; and, In what way does the WRM help participants to practise mindfulness-based self-regulation?

Table 1 shows the research activity and data generated in the two phases of research (see Rose, Sheffield, and Harling 2018) for an account of the teaching method). In both phases, the research processes utilised mindfulness skills and

Table 1. Research activity and data generated in the two phases of research.

PHASE 1	Week 4	Intervening weeks	Week 7
Research activity	Presentation of WRM	Self-monitoring	Reflection on WRM, awareness & application
Detail	Guided reflection using a qualitative questionnaire with diagram QQ1	Guided meditations and adapted practice record sheet	Guided reflection using a qualitative questionnaire with diagram QQ2
Data generated	Diagrams Brief written responses	/	Diagrams Brief written responses
PHASE 2	Day 1	Intervening week	Day 2
Research activity	Introductory session	Self-monitoring	Two-part mindfulness-based workshop
Detail	Guided reflection using a qualitative questionnaire with diagram QQ3	Single day and whole week visual diary sheets	Guided meditation; inquiry/group reflection Phenomenological focus group discussion
Data generated	Diagrams Brief written responses	Diagrammatic diaries Brief written responses	Assistant's notes Transcribed inquiry/group reflection Transcribed group discussion

interactive exercises with the WRM diagram thus combining therapeutic embodied elicitation (Tantia 2019) with diagrammatic elicitation (Umoquit et al. 2013).

The first phase was conducted during three MBSR courses. Of 34 attendees, 27 chose to contribute material generated within the course to the research. Twenty were female and seven male. Fourteen were academics, eight had professional roles and five were administrators. In the second phase, participants were recruited from over 200 MBSR course graduates. Thirty-three expressed interest and seven took part due to being available on the required dates. This group comprised four women and three men. Six had a professional role and one a customer service role.

Data generation

Attendees contributing material will from this point be referred to as research partners (RPs). All example diagrams were originally drawn free-hand and have been re-formatted by the researcher for clarity.

Phase 1 method

In phase one, twenty-seven MBSR course RPs contributed their first-person investigations into patterns of stress reactivity to the research.

Activity (week 4): presentation of WRM

The WRM was presented in week four. The process began with a verbal articulation of the workable range between two thresholds of tolerance, whilst drawing two green parallel lines horizontally across a whiteboard.

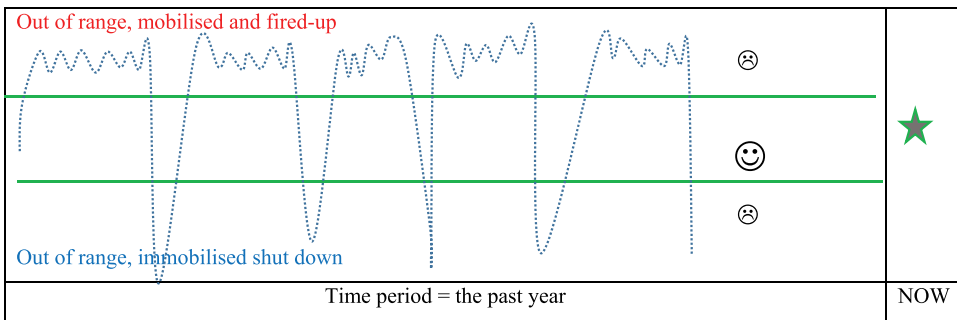


Figure 2. Diagrammatic response to the first four questions in QQ1 – example 1.

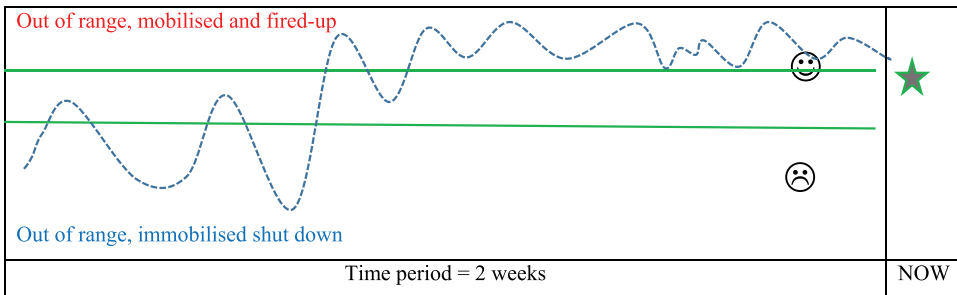


Figure 3. Diagrammatic response to the first four questions in QQ1 – example 2.

The presentation included the main features of the mobilising (in red) and immobilising (in blue) stress reactions. A brief explanation was given about how the vertical axis represented changes in arousal and the horizontal axis time allowed changes in state to be conveyed visually. Wavy lines within the workable range represented regulated states whilst fluctuations across the upper and lower thresholds illustrated dysregulation. A second diagram showed narrowing of the workable range over prolonged dysregulation to a 'wired' and a 'tired' dysregulated state.

Data were generated through a qualitative questionnaire consisting of ten items. In case further explanation was required, the researcher read out the first four questions for immediate completion and encouraged RPs to follow what they felt or sensed at an embodied level and to avoid intellectual analysis. These four questions referred to a blank WRM diagram (for completed examples see Figures 2 & 3). The remaining questions were completed in the RPs own time, two returning the form the following session.

Question 1. On the diagram below where you would say your usual 'Workable Range' is? That is when you feel OK, 'together' and able to function well. Is it bang in the middle, a little higher or lower? Do you see

it as being quite wide or narrow? Use two lines to depict your usual 'Workable Range'.

Question 2(a). Where are you on the diagram above right now? Use a pen to mark the spot or spots where you are right now with *NOW in the column on the right.

Question 2(b). How do you know? What in your direct experience is informing that knowledge?

Question 3(a). Where do you most prefer to be? Please mark that on the diagram with a ☺

Question 3(b). Where do you least like to be? Please mark on the diagram above with a ☹

Question 4. Think about a recent time when you felt stressed or destabilised emotionally. Can you describe with a mark, marks and/or a line on the diagram above what that was like? If you can please indicate the time period i.e. over today, this week, fortnight, month, few months or year.

Question 5(a). Do you recognise when you are in the green zone, within a workable range of stress and emotion? Not at all/Occasionally/Often

Question 5(b). What it like for you? What are you aware of in your body and how do you feel when you are in a workable range?

Question 5(c). How does it affect your functioning and work?

Question 6(a). Do you recognise when you are in the red zone – mobilised and fired up? Not at all/Occasionally/Often

Question 6(b). As 5(b) - *Question 6(c)*. As 5(c)

Question 7(a). Do you recognise when you are in the blue zone – immobilised and shut down? Not at all/Occasionally/Often

Question 7(b). As five (b) - *Question 7(c)*. As 5 (c)

Question 8(a). The wired-and-tired diagram shows a narrowing of the workable range and the oscillation between mobilised fired up and immobilised shut down. Can you relate to that in your own experience? Not really/A little/Very much

Question 8(b). Can you describe what that is like for you?

Question 9(a). In general, is the Workable Ranges Model one that makes sense to you in terms of your own experience?

Question 9(b). Has the introduction to the Workable Ranges Model added to your understanding of your stress and emotional balance or explained some aspect of your own experience in a new way? Please say how.

Question 10. If you would like to add anything about your experience of stress and emotional balance/imbalance in relation to the fit with the workable ranges model please do so below. Likewise, if you have any comments in relation to the model not fitting with your experience please add them below.

Activity (intervening weeks): self-monitoring

Over the following three weeks, RPs were encouraged to connect with and to monitor their experiences of regulated and dysregulated states and, as taught in the MBSR curriculum, to develop intentional responses. To do so, guided meditation practices were suggested and the usual practice record sheet was adapted to include workable ranges tracking.

Activity (week 7): reflection on WRM, awareness and application

In week seven, RPs completed a second qualitative questionnaire about what they had noticed and learned about their reactions in daily life and had the option to express information diagrammatically as well as in words. This included two people who had missed the presentation but were able to grasp the core concepts from handouts to participate. Data were generated through a second qualitative questionnaire QQ2 consisting of six items, question 5 referring to a blank WRM diagram (for completed example see Figure 4). In case further explanation was required, the researcher read out the questions for immediate completion.

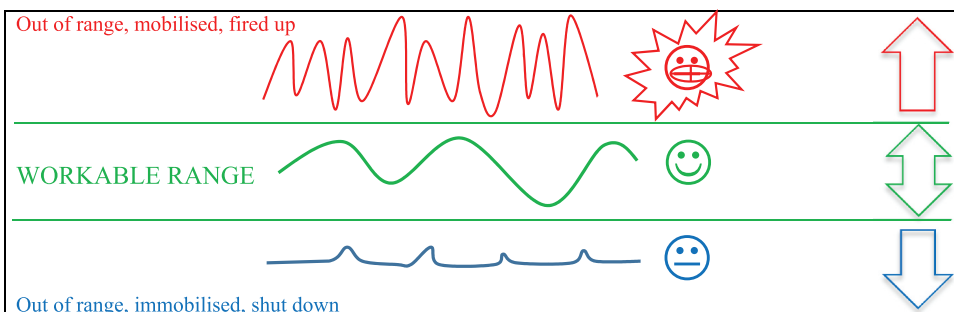


Figure 4. Diagrammatic response to question 5 in QQ2 – example.

Question 1(a). Have you been able to recognise times between sessions 4 and 7 when you were in a workable range? Not at all/Occasionally/Often

Question 1(b). How did you know?

Question 2(a). Have you been able to recognise times when you were out of range in the red? Not at all/Occasionally/Often

Question 2(b). As 1 (b)

Question 2(c). How did you respond to that?

Question 3(a). Have you been able to recognise times when you were out of range in the blue? Not at all/Occasionally/Often

Question 3(b). As 1 (b)

Question 3(b). As 1 (c)

Question 4(a). Can you describe anything that you've become aware of when you've practiced the breathing space that have informed your understanding of your patterns of stress and emotional reaction?

Question 4(b). Can you describe anything that you've become aware of when doing any of the other meditation practices from the course? If so, how has that informed your understanding of your patterns of stress and emotional reactions?

Question 5 (a & b). Please depict (a) and/or describe (b) what you have learned about your workable range and your own patterns of stress and emotional balance and imbalance, and the way they change over time. Please answer by using the diagrams the text box below, or in any way that suits you.

Question 6. Do you think you might use the model along with the practices and skills you've learned on the course in the future? Yes/No If you answered yes please say how in the space below.

Figure 4 below shows an answer to question 5 about learning. The RP vividly depicted the feel of the states with different lines and facial expression.

Phase 2 method

In phase two, seven MBSR course graduates became RPs and joined the researcher to further investigate how the WRM complemented mindfulness practice and supported self-regulation outside of the confines of the MBSR intervention

Activity (day 1): introductory session

In an introductory session, the seven RPs were inducted into their first-person research role, including an overview of the conceptual encounter and mindfulness as a phenomenological method. This was followed by a brief overview of the WRM and a guided reflection. Data were generated using short qualitative questionnaire QQ3, comprising the first four questions and a blank diagram from QQ1 as in phase one week four (for completed examples see Figure 5). The accompanying text to Figure 5 illustrated how the WRM was used to connect with changes that occurred through engaging with mindfulness training. Drawing it out on the diagram, he connected with the embodied memory of chronic mobilised stress prior to the course, feeling a drop into an immobilised state when recognising it when first introduced to the WRM on the course and then moving into a more manageable workable state.

Activity (intervening week): self-monitoring

The RPs engaged in a week of self-monitoring, mindfully noticing their experiences of balance and stress states. Data were collected through single-day and whole-week visual diary sheets that were used to record observations. These comprised a table with the three states in the WRM horizontally and days or times-of-day vertically. Lines, marks or words could be used to record experiences of the three states and how changes between them unfolded (for completed examples see Figures 6 & 7).



Figure 5. Diagrammatic response to QQ3 – example.

WRM	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
			☹		☹		☹
	☺	☺	☺	☹	☺	☺	☺
			☹	☹			

Figure 6. Example of a whole-week visual diary.

WRM	7 am	10 am	1 pm	4 pm	7pm	10 pm
	Tired withdrawn	Made myself exercise	Felt better for downtime	Conflict free family time	Not very energised but feel much better than in the am	

Figure 7. Example of a single-day visual diary the workable ranges model.

Activity (day 2): two-part mindfulness-based workshop

A two-part experiential mindfulness-based workshop was held one week after the introductory session. The first part comprised a meditation in which the RPs were guided to feel and observe changes in state. They were then asked to reflect on what they had experienced in an audio-recorded group discussion. The second part comprised an audio-recorded phenomenological focus group. The purpose of the focus group was to facilitate detailed and open discussion regarding the RPs’ experience and discoveries through the diary practice, their experiences during meditation, and their views and reflections about the interplay between practicing mindfulness and explorations with the WRM. An assistant supported the workshop and took field notes. Field notes included observations regarding body language such as how RPs used both hands to indicate the width of their workable ranges and a hand or a finger to describe patterns of experience over time. Hence, data comprised written field notes and verbatim transcription of the two group discussions.

Data analysis

Data analysis in both phases of research was framed by the aim of describing and understanding how the WRM complemented MBSR in practice. That is, how the drawing out of data on diagrams and associated written or verbal reflections served the purpose of embodied experiential learning. The analytic strategy included both cross-case analysis to identify commonalities and spread of experiences and within-case analysis to elucidate different

experiences and learning processes. Within this overall approach, the data were analysed differently in the two phases and practice contexts.

Phase 1 data analysis

The phase-one data collected in weeks four and seven of an eight-week MBSR course comprised adapted WRM diagrams and brief written responses. Template analysis (King 2004) was chosen because it enabled a qualitative cross-case analysis focussed on research questions about the therapeutic techniques in relation to the aims of the intervention. An a priori coding scheme, i.e., 'template', was designed to identify phenomenological details of the WRM states recognised by the participants and illuminate how the data-generating exercises worked and supported the aims of the intervention. The template consisted of six themes: engagement and resonance; awareness, descriptions and effects of the states with sub-themes for the different states and their impact on daily working life; preferences and patterns of reactivity; responses to mobilising and immobilising reactions; experiences in, or links with, meditation practices; learning and application. Techniques from matrix analysis (Miles and Huberman 1994) were also employed, one matrix collating the data for each RP to understand their individual learning processes and other matrices collating the template themes to identify patterns across the data. Finally, the analysis involved re-arranging the matrices and condensing data within the spatial categories of the WRM. We provide two examples of this final step in the interests of illustrating how the WRM can be used as a map and method for 'drawing out' embodied knowing.

The first example collates information RPs provided when asked to position themselves on the WRM and to describe that state in words. The resulting map (Figure 8) conveys both spatially and descriptively RPs' embodied knowing with regard to how they knew which part of the WRM they were in (each quote followed by the anonymous RP identifier).

The second example illustrates how the WRM format was used to organise themes regarding the impact of the different states in the workplace as identified in the template analysis/matrix analysis (Figure 9). In this example, the visual metaphor of a narrowing of the workable range was used to represent the reduction of work functioning and risk of burnout resulting from fluctuating dysregulation conveyed across the data.

Phase 2 data analysis

Phase-two data were collected at three points: in an introductory session, over the following week and in a two-part experiential workshop. Data comprised adapted WRM diagrams and diagrammatic diaries each with brief written responses, transcribed audio-recordings of two group discussions, and the

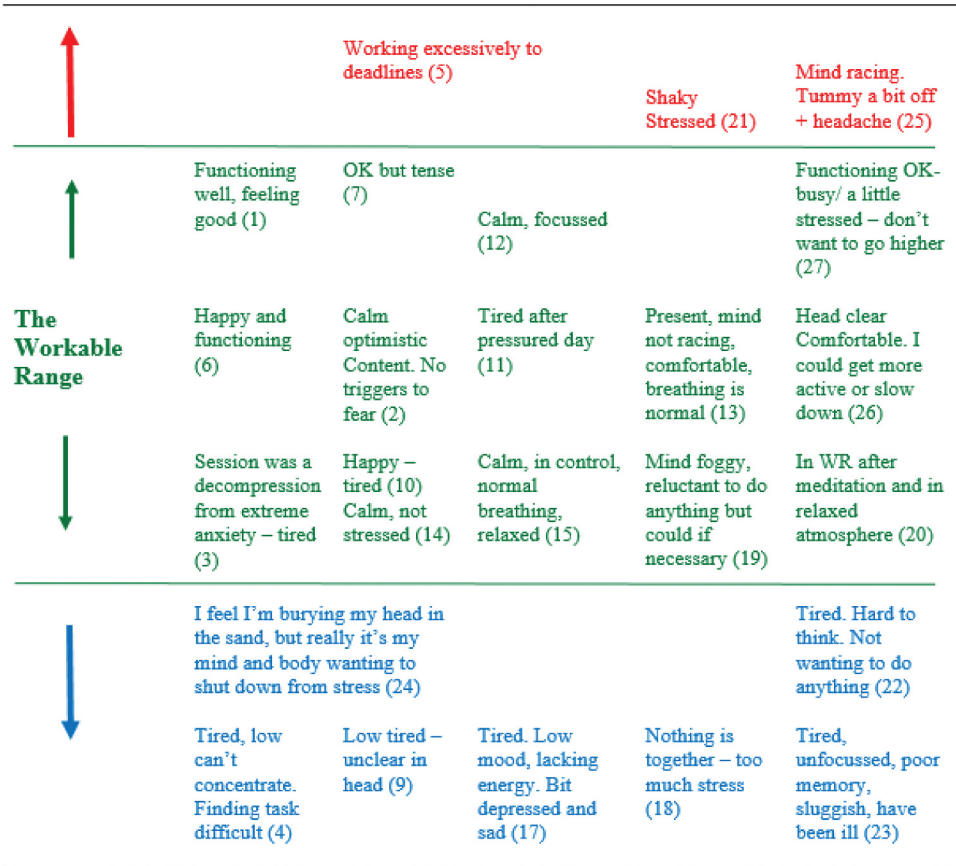


Figure 8. How RPs knew which part of the WRM they were in.

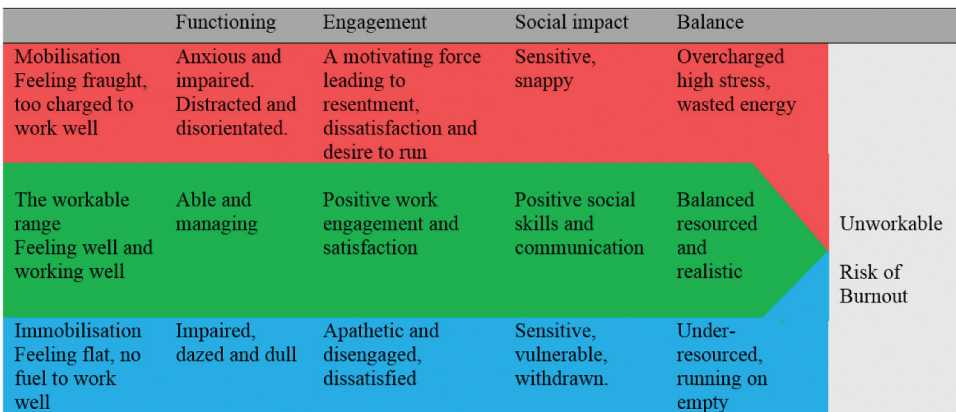


Figure 9. Impact of the different states in the workplace.

assistant's notes. The intention here was to explore the RPs and practitioner-researcher's interpretative meanings in relation to the research question. Thematic analysis (Braun and Clarke 2013, 2019) was used to analyse the data in relation to how the RPs combined self-enquiry using the WRM and mindfulness. Thematic analysis was selected because it provided the flexibility to remain open to novel meanings conveyed by the RPs, to take a phenomenological approach, and to incorporate researcher reflexivity. The data generated immediately following mediation and the focus group data were analysed separately because the former appeared to be closer to present-moment embodied experience.

Coding included both data-derived semantic codes, recognising the phenomenological value of RPs' direct experiences, and researcher-derived latent codes that went beyond explicit meanings to interpretation. The latter drew on the WRM to collate shared lines of enquiry between RPs with regard to loss of mindful balance or chronic dysregulation. The overarching theme identified was that the WRM works as a dynamic map for the mindful exploration of stability and stress. This spanned three themes that articulated interrelated practices associated with using the WRM as a map and guide: charting regulated and dysregulated states; embodied application in mindfulness practice; and, orienting to and resourcing regulation and self-care (Rose and Sheffield 2022). Later reflections on the WRM as a map led to naming the themes/practices as mapping, meeting and modulating respectively.

RPs first-person research extended to questioning how the WRM chart fitted with and could be manipulated to explore and represent different aspects of stress experiences. In accordance with the aim of conceptual encounters (De Rivera 1981), their investigations added new phenomenological details and complexity to the WRM. Figure 10 is the researcher's depiction of three of the RPs findings. They were: widening the workable range during a manageable temporary challenge, followed by a narrowing; pinch points, the sudden compression of the workable range when things are too much; and, features of a reduced workable range during chronic stress feeling mentally and emotionally wired, whilst also physically drained and tired mapping onto both forms of dysregulation simultaneously.

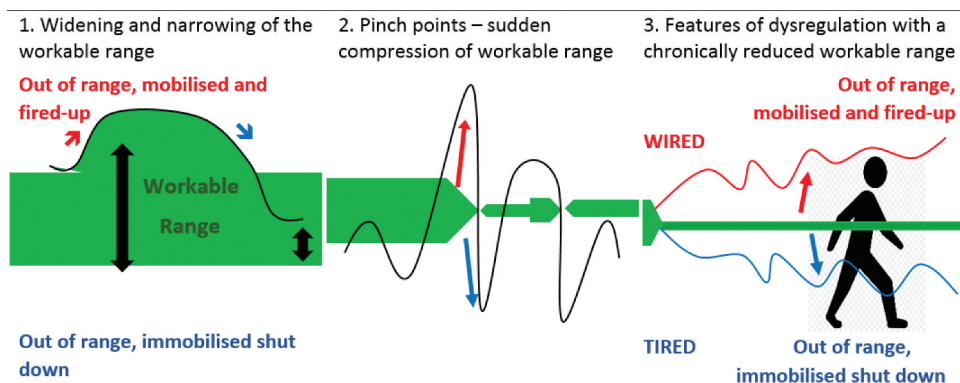


Figure 10. RPs' findings about changes to their workable ranges.

Expanding the WRM as a research tool

We have provided an example of a two-phase research study in which the WRM was used as a map and method for ‘drawing out’ research participants embodied knowing about regulated and dysregulated states. The first phase focused on recognising and describing states and their impact within the context of experiential engagement in MBSR. The second phase involved a deeper interpretative exploration of the combination of the WRM and mindfulness to support self-regulation. The research demonstrated that the WRM complements MBSR by facilitating learning about psychophysical states in an embodied experiential manner.

This is just one example of the way in which the WRM map generates information about, and can facilitate exploration of, the physical, emotional, cognitive and behavioural features of regulated and dysregulated states. Hence, we now consider how the WRM might be expanded as a research tool across fields interested in similar phenomena including, but not limited to, occupational and health psychology, sports science, and food and nutrition. In so doing, we consider three shared methodological features of the two phases of our example study: (i) visual presentation of the WRM and key concepts; (ii) facilitated first-person embodied enquiry; and, (iii) multiple data-collection points.

Visual presentation of the WRM and key concepts

The visual presentation of the WRM (Figure 1) enables key concepts regarding experiences of psychophysical regulation to be conveyed quickly and simply. This diagram can be used as a heuristic device to explore regulated and dysregulated states as it is or can be adapted to the language employed in specific disciplines and research studies. For example, the terms ‘calm and tense energy’ (Thayer 2003) might be chosen in a study exploring the experiential consequences of particular foods and drinks. Some diagrams displaying the effects of food and a healthy range and high or low blood sugar are analogous with the WRM (e.g., Figure 4 in Faruqui 2017, 46). The WRM and methods described here could be applied to explore relationships between experiential regulation and physiological measures. Moreover, the concept of a workable range overlaps with Antonovsky’s (1987) ‘sense of coherence’ and manageability. These theories and related descriptors could be blended with the WRM to explore adaptability and optimal states for performance respectively. The diagrammatic representation of a narrowed workable range could be central to the research question with people with chronic fatigue conditions, who have greater risks of depletion. The structure of the WRM provides a way to map physical, cognitive, emotional and behavioural aspects of conditions and could be applied to complex changeable conditions such as those associated with menopause.

In terms of methodology, the visual presentation of the WRM can be undertaken in different ways. In-person or live online presentation allows discussion and the use of examples tailored to the specific area of study. However, to reach a large cohort, it might be particularly efficient to create a short video and address questions by email. For example, an animation conveying the WRM for employees has been created (Ethos Consulting and University of Leeds 2022). Its use within a large Higher Education Institutions and other industries has received positive informal feedback indicating that this format could be adequate in some settings.

Facilitated first-person embodied enquiry

In the research example, the researcher guided her RPs in exercises in first-person introspection that enabled both intimacy with, and observation of, bodily experiences (Stanley 2012). Directing participant's curiosity and questions to what is experienced at a bodily level can generate rich and novel information that goes beyond commonplace assumptions and 'socially scripted' explanations (Stelter 2010). The research example concluded that facility of the WRM to evoke embodied knowing was, at least in part, due to the visual spatial metaphor tapping into bodily experience and providing a shared point of reference. Therefore, the WRM diagram could also be adapted to leverage its embedded colour metaphor, for example the way in which rugby coach Evans (2019) uses 'red head' for chaotic uncoordinated states and 'blue head' for calm collected states, which are green in the WRM (Figure 1). Hence, the metaphorical power of the WRM coupled with tuning into bodily experience potentially gives it wide accessibility and application. This approach shares the views of Wilde (2003) and Todres (2007) about the value of embodied knowing in health research. It also provides practical methods for enabling a wide range of participants to tap into it and provide embodied data.

In terms of methodology, depending on topic and research questions, there may be no need for participants to have prior experience of, or particular ability with regard to, embodied self-enquiry. For example, the WRM diagram could be used in a straightforward way by participants to report how tired, calm, or agitated they feel over the course of a day. On the other hand, researchers or participants already familiar with mindfulness and embodied-awareness practices could provide a wider range of phenomenological data. Finally, participants could be encouraged to find their own metaphors to describe their workable range relevant to particular research questions and to adapt the WRM diagram accordingly.

Multiple data-collection points

In the research example, data were generated directly following presentation of the WRM and then during and after self-monitoring using the WRM. This produced rich information on changes in psychophysical state over time. Tracking processes of emotion regulation is relevant for interventions across psychological and physical health conditions (Cloitre et al. 2019). For example, athletes, most notably golfers, can experience psycho-neuromuscular movement disorder known as ‘the yips’ and the development and evidencing of effective interventions includes phenomena related to physical, emotional, cognitive and behavioural (dis-)regulation (Clarke, Sheffield, and Akehurst 2015). Moreover, emotional regulation is central to conditions such as Emotional Eating Disorder and Binge Eating Disorder (Arexis et al. 2022). Hence, the WRM could be used alongside other methods to map changes of state over time and context, and in response to interventions and/or self-directed action.

Of particular import to the use of the WMR to track changes, is that workable ranges vary over context and time. The researcher discovered that some people who enjoy temporary high intensity states for certain activities, and/or because they feel productive there, mark it above their normal higher threshold (Rose, Sheffield, and Harling 2018). This could be relevant for people who need to function in high-arousal states such as athletes or ambulance crew. Hence, an appropriately adapted WRM could be a useful to identify and research people and roles with high risk of burnout and/or mishap and support interventions to develop self-awareness and coping strategies for sustainable and healthy psychophysical functioning. Similarly, people with certain conditions, such as chronic fatigue, may experience a restricted workable range and monitoring changes to it could assist them to self-regulate.

In terms of methodology, the WRM diagram and some of the questions in the qualitative questionnaires in the example research could be adapted for other topics of research. For example, the questions about work could be replaced with questions about impact on other functioning or activity and the relationship between physical, emotional, cognitive and behavioural features. Quantitative methods could also be incorporated, such as Likert scale questions assessing the extent or intensity of an experiential dimension at multiple time-points alongside understanding provided by the WRM of individual thresholds. There may be scope for the WRM to combine first-person experience alongside biological, physiological, and biofeedback measures of psychophysical regulation such as cortisol production and heart-rate variability. Individual and group interviews could be undertaken focused on the relevant embodied experiences facilitated by discussion of the WRM. Finally, the WRM and embodied knowing could be utilised as repeated in-the-moment self-assessments of state in experience-sampling diary methods and be incorporated into clinical trials (Verhagen et al. 2016). As such, the WRM

offers a flexible mode for data generation within the broad remit of methodological pluralism most coherently under the auspices of pragmatism described by Madill and Gough (2008) as an approach which ‘emphasizes shared meanings, joint action, and respect between different perspectives with the ultimate aim of solving specific problems in specific contexts’ (p. 263).

Conclusions

The WRM is both an accessible and versatile map and method for ‘drawing out’ embodied knowing. The dynamic model is a visual resource which qualitative researchers could utilise to facilitate/guide research participants to enact, explore and reveal their embodied knowing about experiences of regulated and dysregulated states. The research methods presented here could have wide application to describe and understand more about particular conditions and problems. Reflection and monitoring practices using the WRM could cast new light on trajectories into health conditions affected by stress and emotion dysregulation and pathways back to healthy balance.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Ethical Statement

The University of Derby Health and Social Care Research Ethics Committee granted ethical approval for the research drawn on and described in this article. The approval identification code was Doctor of Health and Social Care Programme B990. Student ID 100 338 057. The date of approval was 21/03/2016. The participants in the research all gave written informed consent. Local permission to conduct the research with staff at the University of Leeds was given by the Faculty of Medicine and Health, Healthcare Research committee in April 2016 ref HREC15–051.

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