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The 4R Model of Mood and Emotion for Sustainable Mental Health in Organisational Settings

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Abstract: Organisations are aware of the need to maintain the mental health of their employees. People's capacity to recognise and manage their moods and emotions is critical to sustainable mental health, performance, and quality of life, while failure to do so can result in underperformance, disengagement, and in some cases, mental illness. Employees of organisations that provide an appropriate strategy and support are likely to experience sustained psychological and mental health benefits. In this paper, we synthesise previous research into a theoretical framework distinguishing mood from emotion via both top-down (cognitive) and bottom-up (biological) factors. We propose a 4R model to help individuals ***R***ecognise a mood as distinct from an emotion, or vice-versa, and respond in one of three ways; ***R***estore, ***R***esolve, or ***R***egulate. The model posits mood as an interoceptive signal of internal biological homeostasis, and emotion as a signal of external, often social, events that disrupt homeostasis; mood and emotion serve as internal and external bio-affective feedback loops, respectively. We propose that mood is modified positively by the restoration of homeostasis, whereas emotion is modified positively by behavioural resolution of the emotion-eliciting event. The 4R model is low-cost, preventative, and can be applied peer-to-peer in organisations without expert supervision.

Keywords: affect; emotion; feeling; mental health; mood; organisation; performance

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1. Introduction

1.1. Sustainable Mental Health in Organisations

The World Health Organization (WHO) describes mental health as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" [1]. While mental health and mental illness do not necessarily lie on the same continuum [2], good mental health can reduce a person's risk of experiencing [3] and enhance a person's chances of successful recovery from [4] mental illness. Therefore, in the fight against mental illness, maintaining or *sustaining* mental health over the long-term should be the ambition of individuals and communities.

Given that organisational mental health and organisational performance are inherently connected [5], and given that, in the workplace, the effects of one person's poor mental health or mental illness can all too often radiate beyond that person [6], sustainable mental health should also be the strategic aim of business organisations. Based on the WHO definition above, which in essence describes a person who is feeling well while also functioning well individually and socially [7], we propose that *sustainable organisational mental health* is the individual and collective ability of people within an organisation to (a) maintain a state of feeling well and of effective individual and social functioning, and

(b) return to that state predictably and economically following a period in which it has been disrupted.

While sustainable organisational mental health should be a strategic priority, it can be difficult to achieve, especially in times of business, strategic, or social challenges. Moods and emotions play a critical role in the ability of people and/or organisations to meet these demands and are the focus of this paper. The present paper is positioned to address a key message in the call for this special issue; to identify work-related well-being. Our model addresses methods by which organizations can encourage positive workplace behaviour and wellbeing through the enhancement of mood and emotion.

1.2. Mood and Emotion

Mood and emotion are concepts that have engaged and troubled scientists in equal measure for a long time. Despite recent advances in research methods and technology, especially in neuroscience [8,9], many important questions about mood and emotion are yet to be answered [10], for example, those relating to the mechanisms of the subjective awareness of pleasantness or unpleasantness, an awareness typically called *feeling*. The notion of feeling arguably discriminates affective psychological phenomena such as mood and emotion from those that are largely cognitive, such as thought, memory, and decision-making.

Mood and emotion share a complex relationship. While they are conceptually related to the point that the two words are often used interchangeably, people also use them more specifically. Mood often describes a low intensity feeling, typically internal in origin, often not appearing to be about any one thing in particular; people are often 'in a mood', but not always for an identifiable reason [11]. Emotion often describes an intense and conscious feeling in response to an external event or cue, real or imagined; that is, people tend to get emotional *about* something.

Although seemingly a simple matter of semantics, differentiation of mood from emotion is important in contexts such as mental performance and mental health. In the latter context, a substantial percentage of mental illness globally is associated with disordered mood or disordered emotion, possibly as high as 80% by prevalence [12]. Although there is considerable overlap, disordered mood is theoretically evident in burnout, depression, dysthymia, generalised anxiety disorder, and bipolar disorder, whereas disordered emotion is evident in stress, phobias, panic disorders, post-traumatic stress disorder, and some substance-use disorders.

This paper is focused on mood and emotion in organisational settings. In that context, it is worth noting that around 70% of those affected by mental illness worldwide are in current employment [13]. Poor mental health and/or mental illness might not only significantly reduce the wellbeing of a large number of employees, but also significantly compromise organisational performance and productivity. Many organisations would like to think that organisational performance goals and good organisational mental health go hand in hand. The reality, however, is that businesses often prioritise organisational performance at the expense of employee mental health [5]. In fact many organisations may play an overt role in the development of poor mental health [14].

1.3. Mood and Emotion in Organisations

Examining moods and emotions in an organisation is akin to examining the mental health of that organisation. Over and above mental health *per se*, the effects of problematic moods and emotions can be seen in counterproductive individual behaviours such as error [15], avoidance [16], risk-taking [17], and substance use [18], in unhelpful social processes such as bias and inequality [19], disengagement [20], hostility and conflict [21], and decision-making [22], and in physical health conditions such as cardiovascular [23], metabolic [24], and even neurological [25] illness. Whilst it is tempting to view such effects as constrained to corporate businesses environments, they are seen in a wide range of workplaces including sports organisations [26].

To precisely quantify the degree to which problematic moods and emotions lead to these issues in organisations is difficult. Given global [27–29] and sector-specific (e.g., law [30,31]) underreporting of mental health problems, plus the fact that organisational reporting of psychometric variables is generally poorer than in clinical or community samples [32] as well as the tendency for people to fake good in organisational contexts [32], the problem is likely more extensive than data might suggest. However, low response rates and faking good do not explain all under-reporting. Many people become adept at habitually ignoring or inhibiting moods and emotions. Others lack the skills, the motivation, or the opportunity to engage in the introspection required. People who inhibit feelings or who won't or can't introspect often either fail to recognise their feelings in real time and therefore fail to understand them, or become troubled by them because they seem random, incomprehensible, and uncontrollable [33].

One approach to dealing with problematic moods and emotions, and thereby to improve mental health over the long term, is to help people better identify their feelings and better understand their causes and effects [34]. Various permutations of this approach have been described in recent research in this journal and beyond [26,35–40].

In previous papers [11,41,42] we proposed a differentiated, predominantly cognitive and top-down account of mood and emotion with the aim of contributing to psychological theory development. In the present paper, we extend and refine previous research using a bottom-up model. Rather than developing new theory, we synthesise existing theory to propose a novel framework for the differentiation of mood and emotion in organisational mental health contexts and an associated applied model derived in part from the scientific literature and in part from the professional work of the authors of the paper. The applied model is designed to contribute to sustainable mental health in organisational settings. In developing the framework, we recognise the following factors:

- Mental health problems are widespread [13] and often under-reported [32] in organisations, which have a professional and ethical responsibility for the wellbeing of their employees [13].
- The intrusion of work and work-related electronic media into leisure time [43] increasingly adds to the mental health burden and significantly reduces opportunities for restoration, such as exercise and sleep [44].
- Strategies used to regulate negative moods and emotions resulting from work-related factors often include unhelpful behaviours such as substance use/abuse [45] that can further undermine mental health and contribute to burnout and mental illness [46].
- To our knowledge, no models exist that facilitate the systematic application of theory relating to mood and emotion in organisational contexts.

1.4. Method

Theory development plays several important roles in furthering knowledge and practice by (1) providing a fresh perspective or a novel lens through which to observe empirical phenomena, (2) allowing a better understanding and prediction of the processes and outcomes under study, (3) turning attention to a specific set of constructs or phenomena, and (4) explaining empirical phenomena in potentially different settings. Ultimately, theories should *drive* empirical research. Sound theory serves as the foundation for testing ideas as well as for developing new ones in every field of scientific research. This is central to the unfolding process of knowledge development [47].

In producing our previous cognitively oriented framework of mood and emotion [11,41] we synthesised scientific and lay perspectives to develop a research-oriented model [42]. In producing the application-oriented model presented in this paper we followed several similar methodological steps:

1. We searched the peer-reviewed literature in psychology, neuroscience, and evolutionary biology for data or theory relating to distinctions between mood and emotion. In doing so, while being aware of the relative paucity of clear distinctions, especially in the neuroscience literature, we were guided by criteria proposed in previous review

papers in cognitive psychology [11,48]. For example, when an idea such as *background emotion* was proposed by an author [49], and when this idea appeared to meet the structural and functional criteria proposed for mood in previous cognitive psychology reviews but was also associated with a novel perspective—a neurobiological role in homeostasis—we noted that proposal and sought further triangulation.

2. We next differentiated mood and emotion via both cognitive (top-down) and biological (bottom-up) processes. The latter approach represents an original contribution to the scientific literature relating to distinctions between mood and emotion by extending previous contributions [11,41,42,48,50,51].
3. We further developed this synthesis into an evidence-based and coherent model aimed at enhancing mental health and mental performance in organisations This builds on previous applied research by the authors of this paper [26,52–55], other research in emotion and mood regulation [56–60], and anecdotal experience emerging from the professional practice of the authors. This framework is characterised by differentiated strategies for moods and emotions, which represents a novel contribution to the affect regulation literature and to mental health practice in organisations.
4. We developed brief guidelines for the application of the model in organisations.

Our method in developing the 4R model was consistent with Kolb's four-stage experiential learning theory [61], whereby repeated reflections on collective practical experience garnered over several decades generated an abstract conceptualisation. We do not present new data but rather a reinterpretation of existing data. We sought to clearly distinguish the development of the model from testing the model, as doing both together almost inevitably results in the model being supported. A limitation of such an approach is that it draws the reader to the results rather than the arguments underlying the theory. Although this is not undesirable in itself, an issue in the replication crisis is the focus on statistical outcomes [62], and in the pursuit of open science, establishing hypotheses in one paper and testing them in another is seen as more appropriate [63].

2. Underpinning Theory

2.1. Moods and Emotions from a Top-Down (Cognitive) Perspective

Given the ubiquity of the words mood and emotion in everyday conversation, people are often surprised to learn that differentiation between them can be challenging for scientists. In our previous synthesis of the opinions of both scientists and non-scientists [11], differences were identified in three broad areas:

- Context: causes and effects of emotion are more obvious than those of mood [11,48].
- Structure: emotions are more intense but shorter in duration than moods [11,48].
- Function: emotions are about something specific whereas moods are not [11,48].

These proposed distinctions are summarised in more detail in Tables 1 and 2.

It can be seen from Table 2 that most non-academics, as well as many academics, believe that the key differentiator between mood and emotion is their respective causes [11]. In short, mood and emotion are not substantially different processes in themselves; they are a similar process *caused by different things*. People can be in an anxious, angry, or sad mood, and feel much the same as if they were experiencing emotional anxiety, anger, or sadness. There is semantic and subjective overlap between the two suggesting that moods and emotions are underpinned by the same core processes.

If moods and emotions feel the same, how would a person experiencing, for example, anxiety know if they are in an anxious mood or experiencing emotional anxiety? [41]. In answer, consider a fire alarm that can detect smoke and heat, but which in either case results in the same sound. The purpose of the alarm is to redirect attention and behaviour; the alarm does not discriminate the cause, just draws attention to it. In all but the most obvious cases, a person would need to investigate further to establish the cause of the alarm. Likewise, in the case of emotion and mood, the feeling signal itself does not necessarily identify the cause, it redirects attention and sometimes behaviour towards recognition of

the cause and selection of an appropriate response. Feelings serve many functions, but one of them is as a psychological alarm signal [64].

Table 1. Summary of distinctions between emotion and mood.

Criterion	Emotion	Mood
Anatomy	Related to the heart	Related to the mind
Awareness of cause	Individual is aware of cause	Individual may be unaware of cause
Cause	Caused by a specific event or object	Cause is less well defined
Clarity	Clearly defined	Nebulous
Consequences	Largely behavioural and expressive	Largely cognitive
Control	Not controllable	Controllable
Display	Displayed	Not displayed
Duration	Brief	Enduring
Experience	Felt	Thought
Intensity	Intense	Mild
Intentionality	About something	Not about anything in particular
Physiology	Distinct physiological patterning	No distinct physiological patterning
Stability	Fleeting and volatile	Stable
Timing	Rises and dissipates quickly	Rises and dissipates slowly

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Table 2. Comparisons of non-academic and academic distinctions between emotion and mood.

Criterion	Non-Academic	Academic
Cause	65%	31%
Duration	40%	62%
Control	25%	-
Experience	15%	-
Consequences	14%	31%
Display	14%	-
Intentionality	12%	41%
Anatomy	11%	-
Intensity	11%	17%
Timing	8%	-
Function	7%	18%
Physiology	7%	8%
Stability	7%	-
Awareness of cause	4%	13%
Clarity	3%	-
Valence	3%	-

Reproduced from Beedie et al. (2005) [11]. Used with permission.

In the context of mental health, this signal function is perhaps the most relevant perspective from which to view mood and emotion. As with the fire alarm analogy, moods and emotions redirect attention and behaviour, indicating the need for a change in priorities. The intensity of the feeling indicates the urgency of the need, and the valence (pleasantness or unpleasantness) indicates in crude terms the behavioural options available—approach/remain during a pleasant feeling and avoid/withdraw during an unpleasant one. Although in a complex social world the options are far more nuanced, consistent with a good alarm system, moods and emotions facilitate responses that are appropriate and proportionate to the cause. If people allow unpleasant biopsychological signals such as pain or hunger to persist without an appropriate response, not only do they endure increasingly undesirable and unpleasant psychological signals, but they might damage body tissues or systems in pain, or significantly impair metabolic processes in

hunger. Both pain and hunger signal biological priorities that throughout evolution were critical for survival.

Moods and emotions have a lot in common with pain and hunger. When functioning correctly, both will reliably redirect attentional and information processing resources, and very often behaviour. If, however, the cause of either is not adequately addressed, the mood or emotion signal will remain switched on unless it is purposefully managed. In many cases, this maintained signal—often described in clinical terms as a *disordered mood* [65] or a *dysregulated emotion* [66]—can lead to poor mental health and to mental illness. However, recognition of the cause of a mood or emotion is not always a simple process and there is a high risk of error or misattribution. For example, a person might think they are angry because of something someone said, but hunger [67], tiredness [67], stress [68], or dehydration [69] can render that person more likely to react angrily to an otherwise benign event. In such an instance, the focus of the anger—what was said—is not necessarily the *cause* of the anger. Importantly, the mood or emotion signal is not purely psychological, it also reflects biological and physiological activation of the body (addressed in more detail in following sections). Over time, if the signal remains switched on, the person experiences a sustained unpleasant feeling, which we often call stress.

Although mood and emotion can both be seen as brain and/or psychological signals, the signals themselves are often either generated in or amplified by the body; in mood directly so, in emotion as the result of one or more of the brain's sense and/or perceptual processes—termed 'appraisals' in this context [70]—modifying autonomic physiology, although debate remains as to the degree to which appraisal and autonomic responses occur in series or in parallel [71] and whether emotion is necessarily conscious [72]. This speaks to the significant overlap of psychology and biology in performance, stress, mental health, and mental illness. It is not new to suggest that mental health is affected by interactions between biological, environmental, and social factors. It is, however, reasonable to propose that biological factors are rarely considered in dealing with day-to-day mental health, certainly in organisations; an issue addressed in the next section.

2.2. Moods and Emotions from a Bottom-Up (Biological) Perspective

In a bottom-up model, the core mechanisms underlying mood and emotion are biological, specifically the set of regulatory processes collectively termed *homeostasis*, combined with the capacity of our brain to sense these homeostatic processes in real time. Homeostasis represents the totality of regulatory mechanisms that maintain biological processes and systems at, or close to, values that optimise their function, as levels of other internal and external variables such as temperature, fluid balance, or acid balance fluctuate [73,74]. Homeostatic processes involve the cardiovascular, pulmonary, gastrointestinal, genitourinary, nociceptive, chemosensory, osmotic, thermoregulatory, visceral, immune, and autonomic systems [75].

As the central regulatory control system, the brain receives information about the state of homeostasis via the afferent process of *interoception* [76]. The term interoception refers to the brain's receipt and representation of actual (and virtual) somatic changes that may or may not enter conscious awareness [77]. Interoception is arguably the source of the feeling that defines both mood and emotion [13]. Mood and emotion disorders such as anxiety have been specifically linked to poor interoception [78,79], and numerous therapeutic approaches aim to improve interoception to enhance emotional processing [57]. It is imprecise to allocate interoception to any specific brain region, given that the act of sensing, interpreting, and integrating homeostatic information is related to brain systems involved in attention, detection, discrimination, accuracy, insight, sensibility, and self-report [24]. However, there is general agreement that the midline structures involved in conscious interoception include the orbital prefrontal cortex, medial prefrontal cortex, somatosensory cortex, insula, and anterior and posterior cingulate gyri [76,80,81]. The interoceptive signal of ongoing homeostasis has been described as the brain's map of the body's current biological status and resources [82]. Based on a synthesis of previous work

from various theoretical perspectives [49,82–92], it is reasonable to propose that the ongoing maintenance of homeostasis is central to the experience of mood, whereas the interruption or modulation of homeostatic physiology in response to an external event, often to facilitate a behavioural response to that event, is the defining feature of emotional experience.

2.2.1. Mood and Homeostasis

Some homeostatic needs are responded to unconsciously and automatically via the lower regions of the brain and via the autonomic nervous and endocrine systems, resulting in, for example, small regulatory shifts in temperature, fluid balance, and blood sugar [93]. However, some interoceptive information signals the need for a voluntary or motivated behavioural response to facilitate more substantial regulatory changes in homeostasis, requiring action that might include purposeful eating, drinking, or resting. The need for such actions is signalled to consciousness via interoceptive processes and perceived as a change in feeling. The afferent and interoceptive signals from various body tissues responsible for the regulation of physiology therefore constitute the "subjective evaluation of one's condition" [94], which is to all intents a textbook definition of mood [11]. Mood can therefore be seen as a summary score of our homeostatic needs in real time.

This conceptualisation of mood is consistent with what has been termed *core affect* by many psychologists [51,95–97]. The overlap between mood and core affect is sufficiently high for the two to perhaps be considered synonymous. Both mood and core affect are proposed as being at times beyond the human ability to detect [51] or, perhaps more saliently, they operate at a level below consciousness when the deviation from homeostasis either elicits an automatic response or is not sufficiently large to warrant a conscious change in priorities or behaviour. Either mood or core affect could be used to describe the subjective evaluation of homeostatic status. We use the term mood in the present paper and elsewhere for several reasons. First, because it is a more familiar term to non-scientists than core affect [11]. Second, affect *per se* cannot be experienced independently of mood, emotion, or instinct, a point raised by Dennett [98] (who also described affect as "the awkward term [for emotion] favoured by psychologists", p. 45). Third, dysregulated feeling states constitute a significant percentage of poor mental health and mental illness conditions. Although the term affective disorders is used to classify these in some systems [99], mood disorder is the term more traditionally used by health agencies [100].

Consistent with the idea that mood signals homeostasis, factors that commonly disrupt homeostasis will therefore also modify our mood. Obvious examples include low metabolic energy experienced as hunger [101], the excessive use of resources such as blood glucose [102], or the accumulation of metabolic by-products such as glutamate in the frontal cortex [103] experienced as fatigue, and many others such as dehydration, excessive heat or cold, pain, infection and injury, inadequate daylight, and inadequate or even excessive exercise [104]. Most people recognise the link between these factors and their moods. The effect of these factors on moods is exacerbated by the failure to adequately restore homeostasis via sleep, rest, eating, drinking, exercise, or socialisation. In short, anything that either causes the body to deviate from tolerable biological status, use a high level of biological resource, or inhibits the restoration of biological status or resources, will impact on homeostasis and therefore affect mood. A poor night's sleep can leave a person feeling anxious simply because the restoration of biological, and especially neurobiological homeostasis, which is a core function of sleep [105], has been suboptimal. A mood resulting from a shift in homeostatic status will make us more inclined to do some things—for example to eat or rest when we feel fatigued, or to avoid challenge when we feel anxious. This is the basis for the common statement "I'm not really in the mood for it." Although this might appear to be a casual statement of lack of motivation, it reflects millions of years of mammalian evolution, in which moods have guided homeostatic regulatory behaviours. Mood in this context constitutes *an internal bio-affective feedback loop*.

2.2.2. Emotion and Homeostasis

Emotions are largely caused by and are about different things to mood. As we identified above, however, there is significant biological and psychological overlap, the defining feature of which is that the feelings that underpin both mood and emotion are interoceptive signals of the same core biological processes. In short, emotions modify many of the processes and systems that are tasked with the homeostatic regulation that is at the core of mood. The bodily sensations people often call emotions are felt or mapped via the same interoceptive brain processes as the bodily sensations people often call moods [8,106].

Scientific perspectives on emotion vary [77,107], ranging from social constructionist [95,108] through cognitive/appraisal [70,109] to physiological [49,85] models. Certainly not all theorists agree on the role of the human body in emotional responses; for example, it has been proposed that emotions are not the direct result of bodily activity but of limbic system *predictions* of body activity [110]. There is, however, sufficient aligned evidence from psychology, neuroscience, and biology to support the idea that in evolutionary and survival terms, emotions function to facilitate a response to the environment, and that response is often physical. To function in this role, emotions modify our biology and physiology, making available extra resources and capabilities to facilitate a response to an event. In evolutionary terms, emotional responses often involve movement (fight or flight), the inhibition of movement (fright or freeze), or a strong desire to move also described as an action tendency [111], which may or may not result in movement but is nonetheless a component of the subjective experience of emotion.

Remaining aware of the above theoretical disagreement, we maintain that most emotions are initiated by environmental or psychological events that are sensed, imagined, or recalled in brain regions that communicate via the autonomic nervous and endocrine systems to organs of the body. Resultant biological and physiological responses are fed back to the interoceptive systems of the brain and experienced as feeling [49]. These emotion-induced changes include those below that result from neural-mediated (e.g., adrenaline) and endocrine-mediated (e.g., cortisol) signalling:

- Increased metabolic resources such as oxygen and blood sugar availability [112].
- Modification of resource allocation such as increased blood flow to muscles and reduced blood flow to the viscera [113]
- Modification of regulatory processes in anticipation of homeostatic challenges such as increased sweat production and increased threshold for pain sensation [114].
- Increased mechanical potential for initiating and maintaining movement, such as increased motor cortex activity, motor unit recruitment, and reduced neural inhibition [115].

Emotions therefore represent a biological response to events outside of the body, be the event real, anticipated, recalled, or imagined, and the human ability to purposefully recall or anticipate emotionally relevant stimuli is a factor in many mental health issues [116]. In this respect, emotions arguably represent an *external bio-affective feedback loop*. The biological response rapidly disrupts ongoing homeostasis, and this disruption is mapped by the interoceptive system described earlier. As far as that system is concerned, the emotional response represents a *change* in the information contained in an existing signal as opposed to a new signal, analogous perhaps to a change in volume, tempo, or key in a piece of music. To the person experiencing the emotion, this change in the structure of their interoception, experienced as a change in feeling, can trigger a new subjective interpretation of their status in relation to their environment. Importantly, it might also represent the impetus for a shift from interpreting the feeling as an ongoing mood state to interpreting it as an emotional response [11,41,42].

Although situations that cause emotions in modern life rarely require the biological machinery engineered by millions of years of evolution, this biological reality is a hard-wired legacy of our evolutionary past that people today must live with. During evolution, and until a few hundred years ago, the duration of an emotional response would have been minutes, sometimes hours; emotionally salient events tended to resolve themselves one way or another quite quickly. In the modern setting, and especially in high-performance

and high-pressure organisations, emotional responses can endure for weeks and months, sometimes even years. Those sustained emotional responses, alongside the dysregulated homeostasis that often accompanies high pressure and urban environments—for example, 74% of office spaces in Manhattan have low natural daylight penetration [117]—have significant implications for mental health. Learning how to maintain homeostasis via the restoration of pleasant mood and/or the resolution of unpleasant emotion is therefore a critical factor in sustaining organisational mental health.

To summarise the first half of this paper, moods and emotions have their roots in the same processes in biological terms, but they function as signals of different needs, largely biological in the context of mood, and environmental or social in the context of emotion [50]. Moods and emotions are a bit like pain; while all pain is—in normal situations—undesirable, people not only experience varying intensities (e.g., mild and severe), but also recognise and describe different variants (e.g., a sharp pain as distinct from a generalised ache). The signals are in the same nervous system components, but the implications, and often the causes, are very different. Mood signals homeostasis, so moods originate in the biology of the body. Increasing intensity of unpleasant mood signals an increasing need to restore homeostasis in the form of biological status or resources, while positive moods to all intents signal that there is no need to change anything, or even the opportunity to take further advantage of a propitious environment. An unpleasant mood will remain until homeostasis is restored, at least in part, while a positive mood might remain until any behaviour it promotes results in homeostatic imbalance, such as discomfort or lethargy resulting from overeating, boredom resulting from excessive sleep, or fatigue resulting from excessive exercise. Emotion usually originates in a conscious appraisal when an environmental or social event of significance to the individual is detected (or imagined via memory or anticipatory processes). The urgency of this event determines the intensity of the biological and physiological response, with increasing intensity of those responses being experienced as a more intense feeling. The more intense the feeling, the more urgent the perceived need to deal with or avoid the event. Emotion, throughout evolution, has nearly always required biological resources to deal with the cause (fight, flight, or freeze), so emotion secures these resources and in doing so often disrupts homeostasis for the duration of the emotional event.

3. The 4R Model of Differentiated Mood and Emotion in Organisations

Our 4R model presented in Figure 1 is based on distinctions between emotion and mood previously reported in the academic literature and by non-academics (see Tables 1 and 2) [11], as well as the reasoning presented above. It recognises that despite mood and emotion often feeling very similar, the factors that cause moods are different to those that cause emotions. Given that mood and emotion signal the need to deal with these causes, theoretically, different strategies are required to deal with an unpleasant mood compared to those that might be effective in dealing with an unpleasant emotion. The 4R model is presented in Figure 1 and its components; ***R***ecognise, ***R***estore, ***R***esolve, or ***R***egulate, explained below.

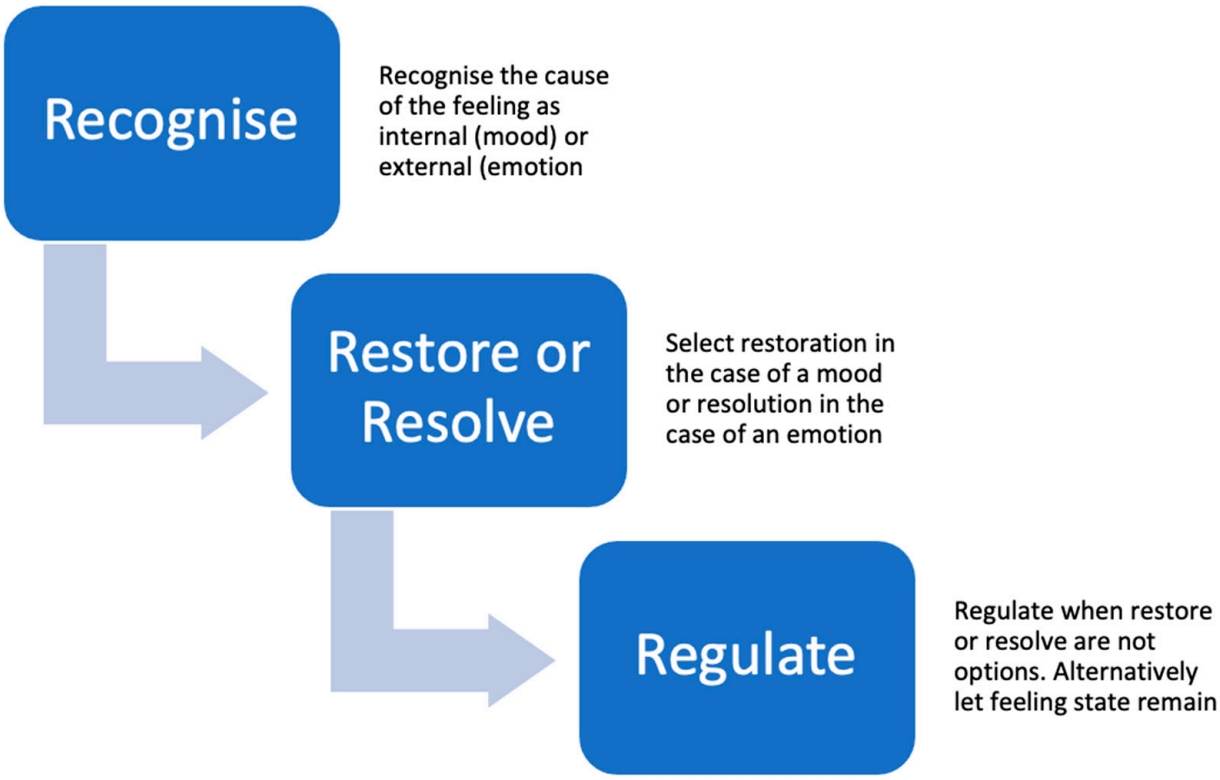

Figure 1. Aligning the cause of a feeling with an appropriate response.

3.1. Stage 1: Recognition of the Cause of a Mood or Emotion

In research terms, the misattribution of interoceptive signals, specifically the idea that emergent physiological arousal might be attributed to the wrong cause or source, goes back at least as far as Schachter and Singer's often-cited 1962 study [118]. This is with good cause because, throughout most of human evolutionary history, it was unlikely that a biological/environmental/social cause and the resultant interoceptive signal would become confused, whereas in today's complex world, and especially in the metaphoric noise of a large organisation, misattribution is a routine event.

A misinterpreted feeling can often lead to an ineffective or inappropriate response. Reliable recognition of a feeling and of the probable cause allows a person to address that cause, making it possible to respond to or alleviate the feeling. For example, a person's growing sense of irritability might appear to be the result of being frequently interrupted by a colleague in a meeting. This is an emotional response in the above model. However, the person might also be aware that their previous night's sleep was interrupted, and they missed breakfast, leaving them both tired and hungry. They recognise that on previous occasions when this happened, they were also more irritable until they had eaten and slept; in short, until they restored homeostasis. In this scenario, the person's colleague is the cue for them to *recognise* their own pre-existing irritability. The colleague might be the subject of that irritability, but they are not necessarily the primary cause of it.

Recognition and identification of a feeling are however far from automatic and far from effortless. The recognition process includes:

- Interoceptively: "Am I feeling something?"
- Perceptually: "What exactly am I feeling?"
- Contextually: "What might be the cause of the feeling?"

Several processes are critical to the recognition and identification of a feeling. First, people need to actively introspect in real time, perhaps by asking themselves what they are feeling at regular intervals. However, introspection skills and motivation are far from ubiquitous [14]. Often, people are too occupied with cognitive tasks to take a few moments

to check their feelings, in which context the cognitive tasks could be considered as noise that can mask or mute an interoceptive signal. More than that, introspection is a relatively underrepresented human skill, and several reasons have been proposed to explain why people do not routinely introspect; that humans evolved to look outwards not inwards in order to survive; that introspection is a cognitive and perceptual skill that does not come naturally; that introspection is rarely taught; that most people do not see real value in introspection; that introspection is hard work; and that many people fear what they might find if they engage in introspection [33].

Over and above the process of introspection itself is the ability to discern the focus of that introspection. In this context it is necessary to consider emotional granularity [119], which is the ability to differentiate between feelings. It is not uncommon to hear mood described in binary terms, as "I'm in a good mood" or "I'm in a bad mood". Such statements provide very little information about either the feeling or its cause, and perhaps do not help identify the best response. Feelings such as sadness, anxiety, and guilt can often feel similar but be caused by different factors. People differ in their ability to recognise and label their own feelings, and recent research has suggested that low emotional granularity is associated with borderline personality disorder, major depression, alcohol use, and post-traumatic stress disorder [120,121]. This evidence strongly suggests that emotional granularity or differentiation may represent emotion regulation resources that buffer against the deleterious consequences of negative emotions [121]

Therefore, it is important for people to develop sufficient introspective self-awareness or interoceptive effectiveness (in this context it has been suggested that even most practicing psychologists have poor introspection skills [122]). Many processes can enhance introspection, for example yoga, mindfulness, and cognitive behavioural therapy (CBT) [123]. Without minimising the contribution of these approaches, they are not easy to mandate, or even to encourage, across large organisations. In our experience, both introspective skills and emotional granularity are enhanced through regular introspection facilitated by self-report measures such as the Profile of Mood States (POMS) [124] or its shorter derivative, the Brunel Mood Scale (BRUMS) [125]. However, organisations should not overlook the fact that even something as simple as people talking to each other about their feelings contributes to the development of self-awareness and granularity and can in itself be therapeutic [126,127]; something we return to towards the end of this paper.

3.2. Stage 2: Restoration of Mood

One function of mood is to signal either a discrepancy between current and desired homeostatic status (e.g., anxiety) or the presence of metabolic resources to be taken advantage of (e.g., happiness). Deviations from homeostasis and optimal biological functioning are regular daily occurrences that often result in deviations from optimal mood (a mood state people might term contentment, the absence of a signal). Numerous mechanisms may help to restore homeostasis (also see Table 3):

- Reducing energy expenditure by resting to allow homeostasis to be restored without the challenge of providing energy for movement, removing metabolic waste, or regulating temperature (note the link between the words *rest* and *restore*) [128].
- Eating to restore energy, maintain nutrient balance, and maintain metabolic and anabolic processes (a distinction must be made between homeostatic and hedonistic eating in this context [129]; the former restores mood via the restoration of homeostasis, the latter by directly modifying emotional responses via several neurotransmitter systems) [130].
- Sleeping, not only to reduce energy expenditure, but to facilitate the clearing of brain metabolic by-products, the consolidation of neural connections [131], and several other neural 'housekeeping' processes [132], thereby restoring brain homeostasis and function [133].
- Exercising and physical activity (note that physical activity refers to any type of voluntary movement), which may have direct effects on homeostasis by raising body

temperature, increasing blood flow, and modifying blood glucose levels, as well as direct effects on brain biochemistry such as increased brain-derived neurotrophic factor (BDNF) levels [134] and opioid neurotransmission [135] that might have acute effects such as pain reduction [136] and chronic effects such as the maintenance of neural connectivity and plasticity [137].

- Exposure to physical environmental factors such as natural light, which over and above has direct effects on energy homeostasis [138] and chronobiology [139] and also triggers neurotransmitter systems such as serotonin [140] that might reduce anxiety and promote melatonin production, thereby enhancing subsequent sleep quality. Even exposure to natural sounds and scents can be restorative [141].
- Social environmental factors such as human company, empathy, and altruism can similarly have positive effects on neurotransmitter activity and modify biology [142] (and sleep quality has been found to predict altruism in individuals and organisations [143]).

In the event of emotional disturbance, immediate restoration may not always be easy to achieve. It might, however, be achieved in part by various strategies. Taking a short break to get either some food, some daylight, or to take a quick walk are effective for many people. Another strategy is to simply inform others of the reason for the emotional response, often reducing the willingness of people to engage in challenging or combative behaviour. This approach, whilst not restorative *per se*, may at least mitigate the effects of low restoration. Of course, the gold standard in restoration is anticipatory restoration, aiming to achieve optimal mood. Table 3 presents several strategies that could be used to restore homeostasis and mood, either as anticipatory or reactive strategies.

In addition to disruptions in mood due to factors external to the workplace or resulting from an individual's choices, it is also important to acknowledge that exposure to certain physical environments may also lead to disrupted or poor mood over time. Just as the presence of certain aspects of the natural environment have a restorative effect on our psychobiology [144,145], equally the absence of certain features or the presence of antagonistic environmental artefacts, including poor lighting and absence of natural light in the workplace [117], shift work, and noisy working environments [146] can impair restoration. Research has identified that the positive effects of something as simple as viewing nature can lead to greater restoration [147]. Addressing these issues by considering physical workspaces may help to play a proactive role in preventing the depletion of resources and disruption to homeostasis.

Table 3. Mood restoration activities.

Activity	Effects
Sleep	Restoration of cognitive function Restoration of emotional function Maintenance of circadian rhythm Tissue repair and synthesis Removal of neurobiological waste products Consolidation of neural connectivity
Eating (homeostatic)	Restoration of blood sugar Maintenance of circadian rhythm Provision of metabolic energy Maintenance of cellular and molecular growth and repair Increased opioid and dopamine signalling
Hydration (homeostatic)	Restoration of fluid and electrolyte balance Restoration of optimal temperature Improved cellular function Improved thermoregulation

Table 3. *Cont.*

Activity	Effects
Change in temperature	Restoration of optimal temperature Maintenance of circadian rhythm (sleep) Improved cellular function Reduced metabolic energy cost
Physical activity	Reduction in excessive arousal Increase in inadequate arousal Maintenance of circadian rhythm Increases metabolic activity/rate Increases oxygen transport Increases thermoregulation Increases endogenous opioid activity Modifies brain chemistry (BDNF)
Exposure to natural light	Improvement in sleep timing and quality Reduction in emotional arousal Maintenance of circadian rhythm Increased serotonin signalling Increased melatonin production
Receiving social support	Increased parasympathetic nervous system activation Increased endogenous opioid signalling Increased oxytocin signalling
Offering social support (altruism)	Reduced sympathetic nervous system activation [148] Increases endogenous opioid signalling Increased dopamine signalling Increases oxytocin signalling

3.3. Stage 3: Resolution of the Cause of an Emotion

Emotions, like moods, are often a daily challenge. For example, people can feel angry about something that has happened, continuously angry about an ongoing situation that has not been resolved, or repeatedly angry every time they recall a past event or anticipate a future one. They can switch off the emotion by resolving the situation that caused it. Resolution is arguably what emotions evolved to achieve [149,150].

To recap, an emotion is not simply a change in mental perception and priorities, but in most cases is a very real change in biology, and therefore is usually a threat to homeostasis. What people typically describe as the feeling associated with the emotion is the interoceptive signal of bodily activity (or a neural representation of this). All other things being equal, the more intense the activation of the body, the more intense the experience of the emotion. Despite the assumption that only high-activation emotions such as anger, fear, happiness, and excitement fall into this category, most emotions result in some activation of biological systems. Even apparently low intensity emotions such as embarrassment and guilt generate obvious biological changes, such as blood flowing to the surface of the face and a resultant small increase in temperature, allowing the brain to detect changes to homeostasis. Emotions such as joy, sadness, guilt, shame, envy, remorse, and many others are all associated with a change in biology.

The effects of sustained emotional arousal should be considered. As an emotional response is caused by an event in the environment, it signals the need to resolve that event, often by biasing brain and body processes towards that end. The classic model of fight or flight suggests that in anger/fight people approach the cause, whilst in fear/flight people remove themselves from the cause, in both cases aiming to reduce the impact of the cause on their immediate goals. In the absence of an *opponent process* [86] such as relief following fear or joy following sadness, it will take a few minutes, sometimes longer, for emotional arousal to return to baseline, a period of time in which the person might be more susceptible

than usual to other emotional responses. For example, irritation could develop into more intense emotions such as anger, even rage, whilst at the same time increasing undesirable physiological arousal. Sustained physiological arousal associated with anger can result in a significant cost in metabolic resources, impacting ongoing homeostasis to the extent that an ongoing emotional response over time becomes almost indistinguishable from a mood, albeit a very high intensity mood; an example of where emotion and mood overlap in nearly all respects. Sustained arousal can be damaging to metabolic and cardiorespiratory health and can contribute to chronic stress and burnout.

Resolution is not always possible. In the professional space, emotions may range from remorse/guilt about the treatment of a colleague or client, through to anger at apparent bias or inequality, to anxiety about a deadline or one's competence, to depression relating to perceived professional inertia or failure. In turn, these emotions may pale in comparison with those experienced beyond the professional sphere in the context of relationships, social status, health, and bereavement. In suggesting that resolution is the ideal end to an emotional episode, it is not to suggest that resolution is always possible. Targeted resolution should be considered before indiscriminate regulation, that is before the symptoms of an unpleasant emotion are regulated without resolving the cause. If the cause is not resolved then there is a good chance that the negative emotion will recur, even if only as the result of being recalled. In addition, the emotion happened for a reason, and the possibility that resolution of the emotion could have a positive effect on the person's professional or personal life should be explored (this is further developed when we consider regulation below). The sheer scale of opportunities in large organisations for people to experience minor but frequent negative emotions and the pervasive effects these can have on their mental health and performance should not be underestimated.

The cause of an emotion is not always a single event or process but rather the accumulation of more subtle interactions. Naturally, people pay greater attention to something when it appears more obvious—a bigger argument or a more public disagreement—but it is often the gradual build-up of smaller, seemingly minor, factors that generate a feeling. A large number of potential incidents can cause changes in mood and emotion, both in our personal and professional lives. Table 4 includes examples of interactions that often occur, both in the workplace and across broader social settings. The accumulation of resolution is a powerful social tool. Small acts of emotion resolution, when repeated numerous times per day and scaled across a large organisation, could lead to significant positive effects on performance, interpersonal dynamics, and the ongoing mental health of that organisation. In Table 5, we suggest a classification of resolution responses; challenge, compensate, reframe, feed-back, avoid, and take control, and present a few simple scenarios in which applications are described.

There is an often-overlooked role for emotion in organisations. In a state of homeostasis, an emotional response would elevate neural, endocrine, cardiovascular, respiratory, and metabolic activity above the homeostatic ideal. However, if the levels of these variables were significantly lower than required for homeostasis, an emotional response might in fact restore homeostasis, albeit temporarily. This is one reason why many people find emotions such as anxiety, tension, irritability, and anger to sometimes be helpful or positive, because they can compensate for poor homeostatic regulation and low biological resources. In fact, it is not unusual in organisations and elsewhere to find people who modify their environment to induce high arousal emotional states, because these emotions can reduce the negative effects of poor homeostasis significantly. When used habitually, these *psych-up* strategies, often associated with self-statements along the lines "I work best when I'm tense", may lead to longer term mental and physical health risks to the person as well as an increased risk of conflict with colleagues.

Table 4. Common causes of emotional disturbance in organisational and social settings.

Experience	Related Workplace Scenario
Exclusion/perceived exclusion	Left out of the final pitch to client/boss Not included in the decision-making process Not included in rewards for the team Information not being shared or being kept 'out of the loop'
Hostility/conflict	Argument with colleague Interrupted/spoken across Irritation with behaviours/habits
Embarrassment/humiliation	Mistakes/poor performance (publicly) highlighted Spoken down to (in front of others) Subject of jokes/unkind comments
Inequity/envy	Overlooked for pay increase when others receive one Witness a colleague(s) receiving praise/reward/success Witness favourable treatment of colleague(s) Learn of colleague claiming credit for your work
Uncertainty/anxiety	Unpredictable behaviour of colleague Unsure of expectations/task Contract expiration/negotiation
Shame/guilt	Treated a colleague poorly/spoken badly of a colleague Acted in a dishonest manner Broke the trust of a colleague

Table 5. Emotion resolution strategies.

Activity	Example Behaviour	Effect on Event/Situation
Challenge	Ask the person to reconsider or rephrase something offensive	Prevents likelihood of event/behaviour occurring Reduces anger/hostility
Compensate	Ask the person to apologise Accept apology Apologise to another person Anticipate a likely issue and inform someone first to frame the situation	Reduces its emotional impact Reduces anger/hostility Reduces guilt Reduces emotional impact and reduces potential feelings of guilt
Reframe	Thinking "I would probably have done the same"	Reduces its emotional impact Reduces intensity of emotion
Feedback	Convey the effect on you of their criticism	Reduces chances of recurrence Reduces anxiety of future repeat of event/situation Reduces possibility of repeated negative emotion due to recall
Avoid/withdraw	Excuse yourself from the meeting	Removes it from immediate environment Avoids escalation of anger and might reduce intensity
Take control	Reset career goals Re-establish relationships Talk about feelings Seek counselling	Reduces its emotional impact Increases hope Catharsis

3.4. Stage 4: Regulation of the Mood or Emotion

The benefits of mood and emotion regulation are reported in a substantial amount of the scientific literature [151]. Regulation has been described in both instrumental and hedonic terms. Instrumental emotion regulation [59], also referred to in some contexts as mood management, self-control, or willpower, has been described in everything from food and drug use, to antisocial behaviour, and to corporate decision-making, and its benefits are widely accepted, even if the person engaging in this approach experiences less positive emotions as a result (e.g., by going for a run instead of going to a bar). Alongside this is the idea of hedonic emotion regulation [59] that modifies the immediate phenomenal experience of the emotion; in short, if a person is experiencing a certain feeling, they do something to switch that feeling to one that is more desirable to them at that moment, perhaps by going to the bar rather than going for a run.

Mood and emotion are signals that something needs doing, and like other evolved signals such as pain and hunger, mood and emotion are switched off once they are restored or resolved. However, there are situations in which the signal may not be switched off; if it is ignored it is likely to remain, possibly intensify, and might even fatigue the system that generates it. If a person misinterprets a signal (e.g., hunger), not only will they fail to switch it off or resolve it, but other problems may emerge. Counter-intuitive effects of bodily states, such as hunger and thirst, on decision-making have been extensively studied [152]. A salient example of the latter can be seen in the context of legal judgements [153], where the homeostatic status of judges has been found to influence the severity of their judgements; all other things being equal, a person does not want to receive their verdict just before lunch. Similarly, if a person tries to switch off the signal without addressing the cause, perhaps by taking a drug to modify pain, they are likely to experience a recurrence of the signal when the drug wears off, which is one reason why pain pills can become so addictive.

Ignoring our feelings or misattributing their cause may be ineffective, whereas direct modification of feelings via regulation is frequently an effective approach. Regulation is used to reduce the intensity of an unpleasant feeling or increase the intensity of a pleasant feeling in real time. Regulation can be achieved via direct means, such as via intense exercise that might increase physiological arousal, by engaging in organic or systematic relaxation that might reduce physiological arousal, or through ingesting coffee, chocolate, and alcohol that might similarly modify our physiology and alter our neurobiology directly. Regulation can also be achieved by indirect means such as varying brain activity through meditation, listening to music, engaging in creative arts, or immersion in film, sport, or a good book. Likewise, regulation might be achieved by approaches less reliant on external factors, such as cognitive reframing and/or countering. A good way of reframing a situation might be to think "If I were in their position, I would probably do the same thing", a line of reasoning that may reduce an angry response. Such emotion regulation is not always easy to achieve when resources are low; purposeful brain activity, such as inhibiting a current emotional response, requires metabolic and cognitive resources that may be in short supply at times of low restoration. Evolution did not engineer emotional responses only for them to be easily stood down [154]. Having said this, it is the very same higher or conscious areas of our brains on which people rely to reframe emotional responses such as anger and anxiety that is very often actively sustaining them, so on occasion the best approach is simply to 'let go' of the feeling, although this is often easier said than done. Table 6 includes several examples of effective regulation strategies derived from real life organisational examples.

It is reasonable to suggest that many people in the developed world, and especially those working in large organisations with expectations of continued high performance, spend much of their lives engaging in mood and emotion regulation (not necessarily consciously), and perhaps too little time engaging in restoration or resolution. In fact, it is quite evident in many cases that partially or temporarily effective regulation emerges from too little restoration and resolution. It is tempting to suggest that if restoration or resolution are not options, that regulation would always be better than no regulation. But the mood or emotion signal is often, although not always, switched on for a reason [87]. When there

is no choice but to turn it off; for example, the person knows the cause of depression, anger, anxiety, or guilt but is unable to restore or resolve these, then regulation could be a better solution than to do nothing, especially if the symptoms are having an adverse effect on that person's life.

Table 6. Mood and emotion regulation activities.

Strategy	Example Behaviour	Mechanism
Distraction	Film/music Socialisation Social media	Modified autonomic nervous system activity (excitement/relaxation) Increased dopamine activity (pleasure & reward) Increase endogenous opioid activity (euphoria and lower pain) Increase oxytocin activity (increased social bonds)
Stimulation	Play Performance art. Creative art Competitive sport Manual work	Modified autonomic nervous system activity (excitement/relaxation) Increased dopamine activity (pleasure & reward) Increase endogenous opioid activity (euphoria and lower pain) Increase oxytocin activity (increased social bonds) Increase endogenous opioid activity (euphoria and lower pain)
Eating (hedonistic)	High energy food Salty/fatty foods	Increased dopamine activity (pleasure & reward) Increase endogenous opioid activity (euphoria and lower pain)
Drinking (hedonistic)	Coffee Alcohol Energy drinks	Reduced adenosine signalling (reduced fatigue) (caffeine) Increased dopamine activity (pleasure) (caffeine & alcohol) Increased gamma-aminobutyric acid (GABA) activity (alcohol)
Catharsis	Sport/exercise Dance/performance arts Martial arts Manual work	Directly modified physiological arousal Increased metabolic activity/rate Increased oxygen transport Increased temperature & thermoregulation Increased endogenous opioid activity Increased brain-derived neurotrophic factor (BDNF) levels
Relaxation	Massage Stretching Systematic relaxation Yoga/tai-chi/pilates	Reduced nervous system activation (lower adrenaline) Reduced endocrine system activation (lower cortisol) Reduced motor stimulation (reduced muscle tension) Reduced skeletomuscular pain
Purposeful immersion	Meditation Creative arts Yoga/tai-chi/pilates	Reduced nervous system activation (lower adrenaline) Reduced endocrine system activation (lower cortisol) Increased dopamine and opioid activity Reduced cortisol and adrenaline
Purposeful altruism	Charity work Fundraising Community work	Increased dopamine activity (pleasure & reward) Increase endogenous opioid activity (euphoria and lower pain) Increase oxytocin activity (increased social bonds)

However, indiscriminately turning off a signal via regulation before it has been interrogated is problematic because addressing the cause—and possibly therefore choosing either restoration or resolution—might prove more valuable and important in the person's life. Space prohibits a lengthy explanation of the benefits of appropriate restoration and resolution of mood and emotion to physical health, such as reductions in cardiovascular, metabolic, and neurological disease, and to a wide range of social wellbeing variables, ranging from increased trust and authenticity to reduced conflict and hostility. Instead, we provide an account of how restoration and resolution, along with regulation, when necessary, are critical to sustainable mental health.

3.5. Why Restoration and Resolution Are Preferable to Regulation

Many people develop problematic mood and emotion regulation cycles, in which regular and predictable unpleasant moods and emotion are regulated by similarly regular and predictable regulation behaviours that fall into one of three categories:

- Largely helpful, such as exercise, socialisation, spending time in natural environments, and enjoying entertainment such as film and music [60].
- Less desirable, in the context of being regular and necessary for regulation, such as low-level alcohol [155], digital and social media [156], and hedonistic [129] as opposed to homeostatic eating [157].
- Potentially serious, such as narcotics [158], gambling [159], and other high-risk behaviours.

The mesolimbic dopamine system is often involved in positive emotional responses, what might be termed the 'feelgood factor' associated with the mood/emotion regulation activities in the list above [160]. However, the mesolimbic dopamine system habituates quickly to the current level of signalling [161]. Therefore, if the environmental factors and biological stress underlying the undesirable mood or emotion persist, the need for ever greater levels of regulatory coping behaviours to maintain dopamine signalling can lead to people moving quickly in the wrong direction along the harmless–harmful continuum. The likely consequence of this, even in the absence of pre-existing problematic moods or emotions, is one or more forms of poor mental health, which are in essence a side effect or repercussion of the regulation strategy. Although this is easy to observe with regulatory activities such as alcohol, substance use, gambling, or risk-taking, it is less easy to spot with, for example, exercise or overwork.

Even for individuals who are dependent on what are generally considered to be positive behaviours such as regular exercise to regulate their moods and emotions, when greater frequency, intensity, or duration of exercise is required to achieve the desired level of regulation, it can result in deleterious outcomes. The exerciser in such a scenario is highly susceptible to needing to resort to higher-risk regulation strategies if they become injured or ill, both common outcomes of compulsive exercise. Similarly, when the level of exercise required for regulation become prohibitive, it is not unusual to see people using a combination of exercise and alcohol to achieve appropriate regulation, perhaps believing that, in health terms, one balances the other.

Likewise, people who use work to regulate their emotions can quickly find themselves trapped in a counter-productive cycle, in which the pursuit of status via taking on a high workload and accepting, even setting, stressful deadlines slowly begins to undermine performance. Over and above the risks to mental health, the risks to physical health of hedonic eating, substance use, and risky behaviour are obvious. In short, regulation strategies, even apparently helpful ones, can become problematic when used as habitual coping mechanisms, and especially when better restoration or resolution options are available. The latter options are often not adopted because, in many cases, regulation is the hedonically attractive option.

It is important to clarify that identifying the pitfalls of some regulation strategies is not necessarily to suggest they should be discouraged. Although the use of alcohol and even drugs appears problematic, the risks associated with these regulation strategies may be preferable to the alternatives. To paraphrase a recent text on the clinical treatment of trauma; if a practitioner mistakes someone's solution for a problem to be eliminated, not only is any attempt at elimination likely to fail, but other problems may emerge [80]. This clinical reality does not necessarily invalidate the idea that unpleasant moods and emotions have a cause, and in many cases—certainly in non-clinical settings such as among otherwise well-functioning employees in large organisations—one aim of helping oneself or others to deal with unpleasant feelings is to seek to understand that cause. Insights into navigating the choice of whether to implement restoration, resolution, or regulation strategies to address scenarios in which feelings are recognised are provided in Table 7.

Table 7. Choosing between restoration, resolution, and regulation.

Recognition	Cause	Restoration Options	Resolution Options	Regulation Options
Anxiety ahead of interview	Memory of previous failure	N/A	Reframing/countering	Relaxation Exercise
Anxiety ahead of interview	Poor sleep Poor diet Low energy	Brief exercise Food/drink Rest	Reframing/countering	Relaxation Distraction
Anger with a colleague	Colleague behaving unprofessionally	N/A	Request that colleague desist or apologise	Relaxation Reframing Distraction Avoidance
Anger with a colleague	Poor sleep Poor diet Low energy	Walk in daylight Eat/drink Take break Find quiet place Rest	Reframing/countering	Relaxation Reframing Avoidance
Low-level persistent guilt	Not allocating time and energy to family	N/A	Reserve time for family Reserve energy for family Apologise to family	Exercise Distraction Reframing Avoidance
Low-level persistent guilt	Poor treatment of colleagues	N/A	Apologise to colleagues Build relationships Modify goals Modify expectations	Exercise Distraction Reframing Avoidance
Persistent anxiety/ sadness/depression	Low work satisfaction Unmet goals	N/A	Modify expectations Modify goals (Only seek resolution if restoration is unsuccessful. If the emotion is not about your career, changes here could make things worse)	Exercise Distraction Reframing
Persistent anxiety/ sadness/depression	Poor work relationships		Build relationships	Exercise Distraction Reframe
Persistent anxiety/ sadness/depression	Unsure as to cause	Improve sleep Improve diet Be physically active Seek social support Offer social support		

4. Do We Need to Distinguish Mood from Emotion?

Common language concepts are important. While precision of language is critical to science, if scientific language becomes too removed from everyday usage, ideas and data are less likely to translate from laboratory to life. Perhaps a prime example is the noun *affect*, which, as noted above, Dennett [98] described as "the awkward term [for emotion] favoured by psychologists" (p. 45). In this paper we could have talked about 'internally generated feelings' or 'externally generated feelings', or 'core affect' and 'context-specific responses.' The model of mood and emotion proposed, over and above facilitating a necessary degree of linguistic specificity and granularity, is deliberately consistent with the linguistic and conceptual distinctions that everyday people make between moods and emotions [11]. The 4R model therefore relies on terminology familiar to employees and decision-makers in large organisations, as well as mental health practitioners and clinicians. Lastly, our

terminology is also consistent with a significant percentage of academic perspectives on the issue, although by no means all.

5. Potential Benefits of Discriminating Mood from Emotion in Organisations

5.1. Improved Mental Health

Mental health, like physical health, represents a broad continuum. In the same way that a person does not need to be suffering a specific illness or disease to experience poor physical health, a person does not have to experience brain disease or mood disorder to experience poor mental health. The latter might take the form of short-term stress extending over perhaps hours or days that can leave a person unable to pursue or enjoy non-work activity, and which might initiate regulation strategies such as alcohol use and/or interrupt important restorative activity such as social time and sleep. This could lead to medium-term stress over weeks and months that can precipitate poor physical health and burnout. In time, this could cause long-term poor mental health including frequent and extended periods of undesirable moods and emotion extending for years without ever becoming clinically relevant and therefore justifying professional intervention. The costs of these factors to individuals in terms of reduced quality of life, relationships, physical health, and longevity can be significant even if the direct effects of poor mental health are factored out. The costs to organisations in terms of everything from lost productivity and poor decision-making to absenteeism and attrition, to hostility and conflict, are equally problematic. And of course, many people do experience clinically relevant mental illness and still do not seek professional intervention, in which cases the outcomes can range from divisive for the organisation to tragic for all concerned. A critical tool in reducing the incidence of such processes is to help people become more aware of their moods and emotions in real time, and to help them opt for more effective and less problematic regulation strategies; in short, to consider restoration or resolution before they regulate.

5.2. Reduced Interpersonal Bias and Conflict

Mood and emotion share a transactional relationship, in which an underlying mood, by modifying cognitive processes such as memory, renders an aligned emotional response more likely. Therefore, understanding a current mood, and the internal biological factors that predispose that current mood, helps people calibrate and trust their emotional responses to external factors. As previously highlighted, a moderately irritable mood following a poor night's sleep and no breakfast might elicit disproportionate emotional anger in response to interruption or criticism, a disagreement, perceived hostility, a poor decision, or an unexpected deadline set by a colleague. In either case, an angry response might result in conflict and/or further negative emotions. In the model described above, it is suggested that such an emotion—in this case anger—should be resolved by addressing the eliciting event. However, in this situation, and despite the anger being apparently in response to the event, the event itself might not have caused the anger; in this case the anger is more the result of modified cognitive resources (perception and memory) and the feeling of low coping resources associated with the irritable mood. Although the emotion is signalling that perhaps the person should resolve the anger-eliciting situation, the concurrent recognition of a pre-existing irritable mood would indicate that the person's emotional response is not necessarily a reliable indicator of the severity of the environmental or social situation. Likewise, the same can be true of an anxious mood, also associated with poor sleep, which might precipitate emotionally anxious responses to a range of events resulting in, for example, a person being less well disposed towards an alternative or creative solution to a problem, more cautious in a pitch to a prospective client, or less willing to defend a valid point of view in a meeting. In short, when people are better able to identify the cause of their emotional responses, they are better able to calibrate the usefulness of their instinctive response and modify it accordingly. It also becomes evident to people that factors they tend to assume relate to physical health, such as sleep and diet, can have a significant effect on their moods and emotions and therefore

their performance, their professional and personal relationships, and their quality of life. These can be important messages in large organisations, especially those with a culture of high pressure and workload, low sleep, poor diet, and alcohol and substance use.

5.3. Reduced Risk of Cardiovascular, Metabolic, and Neurological Disease

The evidence attesting to the physical health costs of stress is substantial [162]. Work stress significantly increases the risk of cardiovascular disease, wherein those experiencing stress are at up to a 1.6-fold increased risk of experiencing coronary heart disease and stroke [163], with employees facing chronic work stress twice as likely to suffer from metabolic syndrome than those without work stress [164]. Emotional stress is also implicated in neurological conditions such as Parkinson's Disease [165,166].

Stress is a nebulous term. In the developed world, and especially in high-performance business sectors, we tend to draw lines between psychological and biological processes as if they are unconnected. The line often drawn between emotion and stress is a good example. Emotion is perceived by many as a subjective, fleeting, and often desirable aspect of life, something people can often choose to experience at any given time, with even negative emotions perceived as adding colour and depth to their daily lives. Stress is often seen as a constant and non-negotiable component of life, something that despite our recognition that it gets the job done, most of us would avoid if possible. However, the disruption of homeostasis that is associated with many emotions, especially anger and anxiety but also depression, guilt, and envy, is in biological terms a stress response. Emotions involve many of the same systems as stress, primarily the autonomic nervous system in the form of the sympathoadrenal-medullary (SAM) system with its effects on adrenaline and noradrenaline, and the endocrine system in the form of the hypothalamic pituitary-adrenal axis (HPA) with its effects on cortisol. In short, at the biological level, emotion is stress. In addition, while other factors can result in activation of the stress systems, an ongoing period of unresolved or unregulated emotion is commonly termed stress.

However, classic stress management techniques tend to have more in common with regulation than with resolution. A significant factor in sustained stress is the disconnect between the factors that people believe cause stress or on which it appears to be focused—conflict, deadlines, poor decisions—and those factors that *actually* cause it, which are often unresolved emotional responses to organisational issues, or even unrelated factors, and all too often in the context of already dysregulated homeostasis. Reliable recognition and resolution in the first instance, or recognition and regulation in the second, allows a person to reduce the intensity of the stress response significantly, lowering the physiological activation of the stress systems and thereby reducing the likelihood of further negative effects.

6. Conclusions

Moods and emotions are more than simply different words for the same thing. We have outlined a model that suggests that moods and emotions are essentially the same thing at a biological level, albeit caused by and consequently signalling different aspects of our environment. Moods signal the internal biological environment, and emotions signal the external and largely social environment. Over 60 years ago, Magda Arnold [167] argued that the knowledge of the cause of a feeling cannot turn a mood into an emotion or vice versa, an observation that speaks to the disconnect between language and biological reality. It also identifies that it is not the linguistic label that people use to describe a feeling that is important, it is the relationship between the person, the feeling, and the real world. The cause of the feeling, the desirability or otherwise of the feeling itself, and the need to sustain or remove that feeling, are all critical considerations.

We have described a 4R model by which differentiated accounts of mood and emotion can enhance factors of significance and meaning to individuals, teams, and organisations. This extends previous review papers in cognitive psychology [11,41,42,48,50,51] and integrates work in, for example, neuroscience [49]. We further developed this synthesis into an

evidence-based and coherent model aimed at enhancing mental health and mental performance in organisations. This builds on previous applied research by the authors of this paper [26,52–55], other research in emotion and mood regulation [56–60], and anecdotal experience emerging from the professional practice of the authors. This framework is characterised by differentiated strategies for moods and emotions, which represents a novel contribution to the affect regulation literature and to mental health practice in organisations.

7. Empirical Tests of the 4-R Model

It seems reasonable that in proposing testable hypotheses we do so for each of the discrete components of the 4R model.

- Recognise: people will be able to distinguish their moods from their emotions.
- Restore: people experiencing moderate to intense mood will find strategies aimed at restoration more effective than those aimed at resolution.
- Resolve: people experiencing moderate to intense emotion will find strategies aimed at resolution more effective than those aimed at restoration.
- Regulate: strategies aimed at regulation will be significantly more effective when people experience intense feelings without being able to recognise it as mood or emotion or when restoration or resolution strategies are not options.

We suggest that researchers investigate the proposals of the model in contexts where people will be experiencing intense mood and emotion as a normal part of their daily work routine, which could be contexts ranging from academic study through business leadership to military or sports performance.

8. Implications for Practice in Teams and Organisations

On the basis of the published research incorporated into this paper as well as our experience using the 4R model, we suggest that organisations encourage people to:

1. Systematically 'check-in' with their feelings through the use of a self-report tool at least once per week, but ideally more often.
2. Think about their feelings in granular terms; to move beyond 'good mood' and 'bad mood' to not only more precisely label the feeling (for example irritability can feel a lot like anxiety until interrogated), but also the intensity of the feeling.
3. Reflect on possible causes and potentially effective responses. Are they feeling irritable because the situation is legitimately irritating, or are they simply tired or otherwise low on resources making them feel irritable about everything? How does this affect their responses, both internal/psychological and external/behavioural? What can they do to modify their current irritability, and what can they do to reduce the chance of a recurrence?
4. Communicate their feelings systematically and honestly to their colleagues when possible; for example, before a meeting people can complete an emotion/mood profile and share this with other attendees (this is now common practice in a number of organisations). This allows the person themselves to be aware of the emotions/moods they are experiencing—and if needs be to respond empathically—but also allows other attendees to accommodate these feelings into their meeting strategy where necessary. It should not be forgotten that, in the workplace, both talking and listening are therapeutic in themselves [126,127].
5. Extending the above, people can employ 'reverse profiling', in which people rate each other's moods and emotional responses. While this strategy is often only helpful between people or among teams with existing trust, it can nonetheless provide a powerful feedback loop and can further enhance emotional awareness and granularity.
6. Anonymously monitor and measure the feelings of employees at an organisational level, ideally routinely, for example every 3 months, but especially during periods of high stress. This often provides a powerful indicator of the mood of an organisation, turning what is often a metaphor into a metric.

Many organisations strive to improve the mental health of their employees. However, it is still rare to find an organisation that takes the feelings of its employees seriously, other than the occasional survey or focus group. We hope that the 4R model presented in this paper serves to illuminate the critical role of feelings in sustainable mental health and wellbeing, in critical performance processes such as judgement, perception, memory, decision-making, and risk-taking, as well as in critical social organisational processes such as leadership, engagement, trust, and motivation.

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