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Eight dimensions for the emotions

Abstract. *The author proposes a dimensional model of our emotion concepts that is intended to be largely independent of one's theory of emotions and applicable to the different ways in which emotions are measured. He outlines some conditions for selecting the dimensions based on these motivations and general conceptual grounds. Given these conditions he then advances an 8-dimensional model that is shown to effectively differentiate emotion labels both within and across cultures, as well as more obscure expressive language. The 8 dimensions are: (1) attracted–repulsed, (2) powerful–weak, (3) free–constrained, (4) certain–uncertain, (5) generalized–focused, (6) future directed–past directed, (7) enduring–sudden, (8) socially connected–disconnected.*

Key words. *Affective state – Arousal – Conceptual space – Dimension – Emotion – Feeling – Valence*

Résumé. *Cet article propose un modèle dimensionnel des concepts des émotions qui soit indépendant d'une théorie donnée des émotions et applicable aux différentes façons de mesurer les émotions. L'auteur souligne les conditions de sélection des dimensions sur la base de ces motivations et d'ensembles conceptuels généraux. Ces conditions une fois posées, l'auteur propose un modèle à 8 dimensions dont il montre qu'il peut différencier à la fois dans une culture donnée et à travers plusieurs cultures non seulement les dénominations des émotions mais aussi un langage expressif moins explicite. Les 8 dimensions retenues sont: (1) attiré–repoussé; (2) fort–faible; (3) libre–contraint; (4) certain–incertain; (5) généralisé–ciblé; (6) orienté vers le futur–orienté vers le passé; (7) durable–soudain; (8) socialement connecté–socialement déconnecté.*

Mots-clés. *Dimension – Emotion – Espace conceptuel – Etat affectif – Sentiment – Stimulus – Valence*

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1. Introduction

Identifying what emotions are requires not just a means to distinguish them from non-emotions but also from each other. Our language provides us with discrete emotion labels, but our practice here tends towards the proliferation of the complexity and diversity that we recognize. With several hundred emotion labels in the English language, let alone related affective terms,¹ *let alone* metaphorical and poetic usage, we are confronted with a wonderful but bewildering array of phenomena. Close investigation of our language can uncover some order in this diversity. But our ultimate focus here is not so much the emotion language itself as the understanding of emotions that is exemplified by this language. Our goal is to find a few general concepts that between them describe the structure of an ‘affective space’ – the fundamental ways in which emotions are understood to diverge. By carefully defining these concepts, we can then create models or maps upon which our discrete emotion labels can be located in a way that reflects our best understanding of what makes one distinct from another.

We should note that the situating of emotions within the broader domain of ‘affective states’ – distinguishing emotional episodes from pleasures and pains, motivations, moods, long-term sentiments, dispositions and personality traits, and so on – is not treated as part of the within-emotion differentiation task here (see rather Deonna & Teroni, this volume; Cochrane, forthcoming). Indeed this paper takes no strong position on the distinction of emotions from non-emotions. Instead it adopts an inclusive approach, seeking to differentiate states even where their status as an emotion is unclear.

Even without a theory of the difference between emotions and non-emotions, defining the conceptual space has considerable potential implications with regard to measuring as well as regulating specific emotional responses. In particular it enables us to measure the ways in which an emotion can vary – both with respect to multiple instances of a common type and along the course of temporal development – before we consider it replaced by something else. Some handle on the boundaries of emotions should also shed light on whether two distinct emotions can exist concurrently. A model of the conceptual space may also play a significant role in our studies of the development and function of emotions by pointing us towards the development and function of whatever distinguishing characteristics we identify.

With the promise of such rewards, the modelling project has so far taken two principal forms. One is the method employed since antiquity, and nowadays endorsed by theorists such as Paul Ekman (e.g. 1999), in which emotions are grouped around certain basic emotions. From this periodic table of elemental states, compounds or blends can be derived that make up

the vast range of emotions. The other method is the use of emotion dimensions, pioneered by Wundt (1897) and now championed by theorists such as James Russell (e.g. 1980, 2003) as well as appraisal theorists such as Ira Roseman (e.g. 1984; Roseman & Evdokas, 2004) and Klaus Scherer (e.g. Scherer, Dan & Flykt, 2006). Here emotions are plotted along several descriptive axes, the crucial difference with the basic emotions model being that the dimensional terms are not themselves emotions. In this paper I explore the dimensional view, comparing my analysis to some of the models employed in the contemporary scientific literature, but specifically focusing on our emotion concepts, and guided by certain conceptual ideals (detailed below).²

There are a number of attractions to the dimensional approach. In particular the idea of plotting emotions along dimensions respects a fundamental observation that emotions can vary very smoothly, both as they progress in time and from case to case. Moreover emotions do not simply vary; the information they provide is typically *dynamic* in content, responding to a world that is constantly changing. For instance one fears not just a future event but an event that is approaching ever closer in time. Or one feels one's body not just to be weak but getting weaker. In this way the concepts we use for dimensions can be conceived as *trajectories* along which our status is constantly developing.

The other advantages of the dimensional perspective relate to language. The focus of the present analysis is our conception of emotions, which, if not fully determined by our language (à la linguistic relativism), is at least most manifestly realized by it. Yet extracting dimensions from this language can allow us to transcend its constraints to some extent. We can recognize general paths in our thinking that we can follow to unmapped corners of emotion experience, some examples of which are provided at the end of this paper.

A related point is that, by breaking down emotion terms into descriptive terms, we can to some extent side-step worries about whether different people both within and across cultures mean the same thing by an emotion term. Of course this then shifts the worry onto the descriptive terms. Yet it is more permissible to prescriptively fix the meaning of such terms as, by breaking down the emotion phenomenon, we move closer towards simply pointing to certain observable components. To some extent establishing a few general and abstract dimensions is a step towards the Semantic Metalanguage envisioned by Wierzbicka (1986), with which any emotion word in any language can be defined through a set of universal semantic primes. Moreover, where the dimensions are applied to the subjective feeling of emotions, they can be of considerable help when attempting to describe that experience, giving the lie to the commonplace that feelings defy description.³

In none of these respects are we served by the basic emotions model. Naturally this need not imply that the richness of our emotional lives does not in fact derive from a few biologically discrete types. But whether this is the case or whether indeed there are real analogue components that correspond to the dimensions we identify (or both) is a question that best follows agreement concerning what we *mean* when we say that ‘he is angry’ or ‘she is sad’. Thus our goal here is to map the conceptual space of emotions as faithfully and efficiently as possible – and moreover to do this without presupposing any particular theory about what emotions are. Quite the contrary, it is hoped that the model offered here will be a useful tool for researchers, regardless of the theory of emotions they hold, and will apply equally to whatever component of emotion is of interest, be it appraisals, emotion language, subjective feeling, physiological changes, expressive behaviours, action tendencies or regulation strategies. Thus, where some dimensional models such as those of Osgood, Suci & Tannenbaum (1957) or Russell (1980) concentrate on feeling states, or appraisal components (e.g. Scherer, Dan & Flykt, 2006), the present model is aimed at integrating different approaches by capturing the meaning of the emotion at a fairly abstract level.

Of course this focus on our conception of emotions is potentially very broad. With regard to language for instance, it can include any and all words used to describe an emotion episode (e.g. how long it lasts, where it happens and so on). But in practical terms, the dimensions I provide will apply most centrally to the emotion labels themselves, with the relevance of the dimensions receding as we move towards less affect-laden terminology.

2. Conditions for the dimension model

Below I introduce an 8-dimensional model that seems to represent the minimal structure required to effectively capture the range of our emotion concepts and which has the capacity to differentiate even near-synonymous emotion terms. But before that can be done, it is necessary to outline the conditions these dimensions are designed to meet. The primary motivation is to show how dimensions apply to emotions in a way that is applicable to different research methodologies and intuitive for non-experts to use. The secondary motivation is to adhere to certain conceptual ideals or virtues about what a dimension model should look like if it is to best serve these requirements of generality and intuitive use.

Thus there are two ways in which the proposed model may be rejected: if it has not properly satisfied the below conditions and if the conditions themselves are not accepted. I acknowledge that researchers may have different

priorities to those outlined by the below conditions. They might seek a low number of dimensions or a model that addresses a specific research methodology (focusing on behaviour for instance). But it does seem generally desirable that one's model be as conceptually clear as possible and explicitly address what features are regarded as essential to a dimension model.

2.1 Initial logical conditions

The following conditions outline some conceptual standards for using dimensional axes to describe some phenomenon.

2.1.1 True-scale condition. No emotion can simultaneously occupy more than one position on a dimension. Any property targeted by a dimension must form a true scale, such that a phenomenon can occupy only a single point along that scale at a given moment. Similarly, if bi-polar dimensions are utilized, then the terms for the extremes should be genuine, mutually exclusive opposites, e.g. to the degree that an emotion is pleasant, it must not also be unpleasant. Were we then to discover an episode that simultaneously outputted two distinct values along a single variable, we could suppose the existence of a genuinely mixed emotion.

Note, however, that some emotions may be defined with less specificity than others, such that they appear to spread across a range of possible values (across different occasions for example). But we would anticipate that, where the emotion is conceived in a more refined manner, it will output a more refined value.

2.1.2 Analogue condition. If an emotion can occupy distinct discrete points on a dimension, then it should be able to occupy positions in between those points. If one is to use a dimensional model for emotions as opposed to, say, a numerical matrix of possible states, then one must conceive of emotions as fairly analogue entities. That is, whatever enables us to attribute a dimensional value to an emotion episode must be something that we can recognize to a greater or lesser extent. Naturally we anticipate some finite limit on the degree with which a dimension can be refined, but, in so far as objective measurements or self-reports manage to distinguish emotional events, the range of possible values seems sufficiently vast to warrant the use of analogue variables.

2.1.3 Independence condition. Occupying a position on a dimension must not entail a position on another dimension. This is perhaps the most important and potentially controversial of the initial conditions. If occupying a

point on one dimension limits the range of points that an emotion can occupy on another dimension, then those two dimensions are not mutually independent. One can ensure that this condition is met by checking whether, for any candidate dimension, it is possible to imagine emotions that occupy the extremes of that dimension, whilst also occupying the extreme or neutral positions on any other candidate dimension. If this is not possible, then one should discard or redefine at least one of the candidate dimensions.

The potential controversy of this condition lies in the fact that it undermines any model that utilizes both the valence/pleasantness dimension and activity/arousal dimension. The reason for this is that it is implausible that one is in an extremely pleasant or unpleasant state at the same time as being minimally or even moderately aroused.⁴ The positioning of emotions on the 'circumplex' models advanced by both James Russell (e.g. 2003) and Lisa Feldman Barrett (e.g. Barrett & Russell, 1999) should in fact resemble a V-shaped distribution comparable to the vertical intensity dimension of Robert Plutchik's multidimensional model of the emotions (1982).⁵

Yet the use of these two dimensions is extremely popular. They are both highly applicable to emotions and easily measurable. Of course the fact that overlapping dimensions can be usefully employed is no guarantee that they are the best way to map the conceptual space of emotions. There are several reasons to prefer a model with independent dimensions. First, such a model ensures that the conceptual space is mapped efficiently and that none of one's dimensions are made redundant by the combination of other dimensions. Second, if one's dimensions overlap, this may well result in the neglect of emotions that would fall into the extreme positions of dimensions more independently conceived. Thus a model with independent dimensions has more explanatory power. Third, independent dimensions reflect our ordinary understanding of this mathematical analogy: that dimensions are ways in which things can fail to coincide, or diverge from each other.⁶ Overlapping dimensions only partially satisfy this ideal.

An additional advantage of independent dimensions is that one can infer from them the possibility of distinct emotion-generating components supporting those dimensions, which would not be possible with non-independent dimensions (cf. the research project launched by Scherer, 1984). Of course it may be the case that no truly independent functions underlie the generation of emotions and, similarly, that it is not possible to arrive at a set of independent dimensions that effectively capture the variation in our emotion concepts. But, if a model with independent dimensions can be found, then for the reasons given above it is *prima facie* a stronger model.

It is in pursuit of this ideal then that I abandon one of two traditional dimensions. I identify the arousal/activation dimension as the main culprit

for the observed overlapping. Applying a dimension of activation to emotions is like applying a dimension of 'being coloured' to colours. It is far too general.⁷ Although the degree of arousal is highly applicable to emotions, it is not doing much conceptually useful work for us. Thus I would be more prepared to jettison this dimension than the dimension of valence (though I raise doubts about valence on other grounds below). In any event, it is plausible that the intensity of arousal is a factor intrinsically bound up with all the component functions involved in emotions. The degree of positive or negative valence already captures one aspect of the degree of arousal and, as I show below, other dimensions do likewise. Thus, between them, the set of eight independent dimensions that I provide make the arousal dimension redundant. The sorts of distinctions it can help us to make, between anger and rage for instance, can be equally captured by dimensions such as the 'power' dimension I discuss below.

2.2 *Relevance conditions*

The following conditions are less conceptually based than those already outlined. They are intended to formally clarify the goals of differentiating our emotion concepts.

2.2.1 Cross-domain condition. Each dimension should be applicable to each of the areas in which we recognize emotions, without excluding or prejudicing any area. By structuring our conception of emotions, the formulation of a dimensional model is an initial stage in clarifying the field under investigation. If we find that genuinely independent dimensions can accurately capture our emotion concepts, then that provides some support for the claim that independent components corresponding to those dimensions are in fact at work in realizing the outputted state. But given the disagreement of various theorists concerning what factors most essentially constitute emotions (the principal candidates being appraisals, action tendencies or subjective bodily feelings), it is inappropriate to assume when constructing one's dimensions that any factor of emotions is more relevant and thus more important to differentiate than any another. Moreover, if we wish the model to provide a useful tool, we should ideally arrive at dimensions that are relevant to the manifestation of emotion in whatever form it takes. As a result, the descriptive terms used should be abstract enough for us to locate examples amongst all the different ways in which emotions are manifested (appraisal, emotion language, experienced feeling, physiology, expressive behaviour, action tendencies and regulation strategies).

It is due to this condition that some doubts can be raised about the self-report method typically employed to derive dimensional models. To take one of the better examples, the study by Fontaine et al. (2007) asked participants to rate 24 emotion terms on 144 different features (the GRID instrument). Clearly some pains were taken to employ a fair distribution of emotion features, yet even here only 22 subjective-feeling features were used, in comparison to 40 action-tendency features. Moreover, although 29 of the GRID features can be construed as socially related,⁸ a category of social features was not recognized (and thus balanced against other features).

This unbalance is a consequence of deriving features based on what has frequently come up in the scientific literature. The problem with this method is that the constraints of empirical research encourage a bias towards clearly observable features like actions (rather than sometimes-obscure subjective feelings) and the solitary individual as the unit of study rather than the more complex group.⁹ One wonders how the results would have differed if features had been derived from the expressive poetry of the last century instead. At any rate, the different ways in which we discern emotional states should be explicitly balanced in these kinds of studies.

2.2.2 Counter-example condition. No two emotions that we consider quite distinct should be found close to each other. This condition is simply a way to check a dimension model against one's intuitions. If one's candidate dimensions are not able to differentiate two emotions that are intuitively very distinct, then one has reason either to discard one's model or to add a dimension that more effectively differentiates them. Informally one can be guided in this respect by our most common emotion terms, as it is reasonable to suppose that they are so common because they are relatively easy to distinguish. Preferably there should be at least one dimension upon which these distinct terms are direct opposites.

This condition is again an important source of objections to current models. In the Russell/Barrett model, for instance, it is quite possible for cases of fear, anger, jealousy, disgust, stress, grief, envy, contempt and embarrassment to *all* occupy the same point in affective space. Russell (2003: 154) has responded to this objection by claiming that his dimensions measure 'core affect', and that accordingly they need not differentiate these emotions. Rather, differentiating these emotions requires of the subject some additional interpretation on the basis of contextual factors. Apart from the implausible claim that our bodily feelings of anger, sadness and fear cannot be immediately distinguished without contextual interpretation (see the introductory article in this issue for discussion), Russell has simply abandoned any claim to be using dimensions to differentiate emotions.

The model of Fontaine et al. (2007) is also affected, though to a lesser extent than the Russell/Barrett model. This model supposes the existence of (at least) four dimensions: pleasantness, potency/control, activation/arousal and predictability. However, it looks like many cases of fear and sadness could be equally unpleasant, lacking in control, predictable¹⁰ and aroused. Although the study does not claim to exhaustively differentiate the emotions, this overlap is hardly insignificant. These are two of the most common emotion concepts in English, as well as many other languages studied (e.g. Hupka, Lenton & Hutchison, 1999). It is a minimal requirement that our model should differentiate them.

2.2.3 Clarity condition. Each dimension must be unambiguously defined. If we are to succeed in our collective investigation into the emotions, then it is essential that our terms of analysis should be commonly and rigorously applied. Unfortunately this is not always so, and the problem is intensified when non-expert subjects are called upon to apply these terms. In the case of emotion dimensions, the most notorious example is valence. The philosopher Robert Solomon (2006) was able to locate 17 possible interpretations of 'positive' and 'negative' including ratings of pleasure, virtue, social status, health, and degree of stimulation – many of which can result in entirely contradictory ratings.¹¹ As a result he concluded that the distinction is overly simplistic and should not be employed.

Yet the problem with Solomon's response is that the sense in which something is positive or negative, good or bad, is ubiquitous in our thinking about emotions (and indeed much else), as is evidenced by numerous statistical analyses in which valence consistently comes out as the primary factor (e.g. Fillenbaum & Rapoport, 1971; Bush, 1973; Averill, 1975; Bottenberg, 1975; Herrmann & Raybeck, 1981; Lutz, 1982; Russell, 1983; Smith & Ellsworth, 1985; Storm & Storm, 1987; Gehm & Scherer, 1988; Russell, Lewicka & Niit, 1989; Fontaine et al., 2007; Galati et al., 2008). For this reason it would be more appropriate to specify the concept more exactly, so that possible differences in interpretation do not confound experimental results. We can arbitrarily decide upon one particular interpretation if necessary, though, for the sake of getting different researchers to agree, locating a central definition would be preferable.

The best way to unambiguously define one's dimensions is to correlate them with clearly observable features. For instance one could correlate valence with the fairly unambiguous behaviour of either approaching or avoiding a stimulus. But since we are also interested in emotional experience accessed by self-report, behaviours should feature only as one possible manifestation of the concept. Again the idea of pleasure–displeasure is often

used in the literature, but this now prejudices feeling. As a result, I will advance a dimension of valence below that is defined functionally. Hopefully this will be suitably clear, yet intuitive enough for non-experts to apply.

2.3 Naturalistic constraints

The final set of conditions that I offer are ways to check that one's candidate dimensions are relevant to the field of emotions as a whole and our particular emotion concepts in particular. Otherwise one might come up with all kinds of dimensions like 'red-not red' which, whilst satisfying the conditions above, are not usefully applied to the emotions.

2.3.1 Applicability condition. Every dimension should be applicable to every emotion. A candidate dimension may not be profoundly relevant to every emotion that one can think of, but it should at least be applicable, such that specific emotion episodes can be given specific values on that dimension as they progress. Nor should any emotion be neutral on all dimensions (unless one is referring to total neutral calm).

In practicality we should prefer dimensions that apply to more, if not all, of our emotion terms.¹² For instance, the dimension of 'socially connected-disconnected' advanced below is not particularly relevant to all imaginable emotions, but does manage to cover a wider range of emotions than a dimension like 'other attacking-protecting'.

2.3.2 Fixed identity condition. Labelled emotions should remain relatively static on at least some dimensions. Due to the broad nature of at least our common emotion labels, which allow many different tokens to fall under a single type, we should not expect to attribute them a fixed point on every dimension. Single episodes are also likely to fluctuate along our dimensions as they progress through their temporal envelope. However, if an emotion has been successfully labelled, then we should expect it to remain fairly static on at least one dimension. Otherwise one's dimensions have not succeeded in capturing whatever semantically stable fact about the emotion enables the linguistic community to label it. The only exception to this rule is perhaps generalized arousal. Particular cases of arousal may well sit at particular points on the dimensions. Yet the general concept of arousal is so broad that it may not be possible to narrow its range on the dimensions.

2.3.3 Naturalism condition. Our emotion terms should be spread relatively evenly throughout the various dimensions. This condition is purely heuristic.

I noted above that our discovery of dimensions will help us to transcend the limits of our language to some extent by allowing us to recognize unmapped possibilities in the conceptual space. And certainly our emotion language is not driven towards filling out the conceptual space so much as recognizing cultural salencies, frequencies of experience and so on. Yet, given that language diversifies over time (current estimates of the English language range from around half a million to well over a million words; see Grimond, 2008), we can expect that more and more subtle distinctions will accumulate. In addition, given the focus of emotion dimensions on our emotion concepts, the same motivations that drive the lexicalization of emotional phenomena also drive the choice of dimensions, i.e. frequency of use (distinguishing common terms), and salience for the speaker. Thus, although we can expect that, as a consequence of cultural preoccupations, our emotion terms will bunch or clump together upon the dimensions to some extent, it is plausible that the more emotion terms one takes into account, the more likely they are to spread evenly across the dimensions that are designed to map them.¹³

Note that this condition may only allow us to reject a dimension in fairly extreme cases (such as a dimension of 'being afraid of heights or not'), and in general we would need to be confident that our inputted data is reasonably diverse. To give an example, one of the dimensions advanced in Fontaine et al. (2007: 1055) is predictability. When they plot their emotion terms on this dimension, nearly all the terms clump together towards the neutrally predictable range, with surprise sticking out on its own in the highly unpredictable range. Yet since only 24 emotion terms were analysed, the plausible response is that the distribution would become more even as more terms are added or, in other words, that the initial choice of terms was unbalanced in this respect.¹⁴ So in practicality, such a gap is a reason to suspect either the inputted terms or the dimensions employed.

3. Methodology

3.1 Methodological priorities

With these conditions in mind, I could begin to formally justify my choice of dimensions. Of course the choices of a single philosopher may not seem especially reliable to those steeped in experimental methodology. Yet a significant advantage of this approach was that I was not limited to a small number of emotion terms as my input set. Rather the dimensions I selected had to fit any emotion that I could imagine.

In addition, although I was influenced by the conceptual ideals outlined above, my method was inductive and I respected the experimental evidence as much as possible. That is, the numerous factorial analyses were impressive enough to convince me to first of all consider the dimensions of valence, arousal and potency/control. Moreover, the evidence that some dimensions account for more variance than others in Fontaine et al. (2007) – despite the limitations in the input set noted above – gave reason to follow their order of priority. By subjecting these dimensions to the conditions outlined above, particularly the counter-example condition and the independence condition, I could then add, modify or reject dimensions. Also, sharpening up the definitions of these candidate dimensions led me to split some of the dimensions in two.

Given that our emotion concepts centre around our emotion labels, the second methodological priority was to differentiate the most common emotion terms found in the English language, i.e. fear, sadness, anger, happiness and so on. I am aware that this method may undermine the universality of my model. It is possible that not all of these emotion labels (as least as a unified category) may be found in other cultures. Yet their prioritization within the selection method may well bias which dimensions are chosen, even if ultimately one's dimensions are checked against every possible emotion. This is because in practice one applies the independence condition by generally trying to preserve whatever dimensions are currently selected and then looking for dimensions orthogonal to those. If I were to begin with a different set of candidate dimensions and a different set of initial emotions, then perhaps a different set of dimensions might emerge. And these dimensions might function equally well, if not better, in differentiating the field as a whole. I invite readers to try the process for themselves and see if any convergence results.

A third methodological priority was to look for factors that are fundamental to our concepts in general. In particular, it has been observed by philosophers since Kant that we cannot help but situate our experiences in space and time. Thus I sought to apply these concepts to the emotions. The temporal dimensions of duration and flow fitted easily, reflecting the strongly temporal nature of the emotions. The concept of space, on the other hand, could only be applied with some reinterpretation. In the case of emotions, the relevant spatial contrasts are not height, breadth and width, but *internal* and *external* to the body (or the more abstract 'self'). These concepts are exemplified in my dimensions of personal strength and freedom, respectively.

In addition to space and time, it also became clear that our sense of cause and effect is fundamental to our understanding of the world. This is captured by two dimensions: one of probability, or our sense of how things might

have been different; and one of generality, that is, the sense in which a cause or effect shapes multiple objects or is narrowly focused on a single detail. Finally, while it may not be essential to the experience of all living things, one's status as a social creature, as one being amongst many, is basic to the human condition. Our survival as a species is driven to a large extent by our collaborative capacities. It seemed obvious then that at least one dimension concerning our social relations should be applicable to the emotions.

A final formal aspect of my method of selection was that, if a dimension could be found that matched the conditions above, then I would add it, even if its impact on differentiating the field was relatively slight. That is, if the proposed dimension was minimally relevant, then there was no reason to exclude it. My model contains eight dimensions, and perhaps some readers will regard this as an unacceptable inflation. Nevertheless, it is more important to the goals of this study that the emotions are efficiently differentiated than that the total number of dimensions is of a more manageable size. Moreover, although I am unable to imagine any more dimensions that do not overlap to some degree with those already selected, I am not able to assert with much certainty that more dimensions are unavailable. I can only say that, as far as I can tell, the counter-example condition has been met, such that even near synonyms can be differentiated in the system.

The above constraints allowed me to proceed in a fairly rigorous manner. Yet, even given all of these factors, it cannot be denied that a certain amount of serendipity attended the choice of these dimensions. Beyond the most obvious labels, one is left to consider all the possibilities that one can imagine. Two of the dimensions (generality and probability) were suggested by colleagues (Ruthger Righart and Klaus Scherer, respectively). On reflection, these could meet my conditions and helpfully distinguish a few problematic cases. Moreover they led me to realize the importance of our fundamental concepts of cause and effect to emotions. Another way in which the final selection was more art than science was that, due to the independence condition, I had to consider the balance of the overall set of dimensions. This demanded a fine-tuning process, trying out various definitions until some could be found that elegantly captured the range of relevant qualities, while avoiding stepping on each others' toes.

3.2 The homogeneity of the dimensions

As noted above, the dimensions selected are homogeneous with respect to capturing certain basic conditions of human experience: one's sense of time,

one's sense of bodily space, one's sense of causation and one's sense of social connectedness. None of these dimensions are especially emotional in tone. They are just fundamental ways in which the world is presented to us. However, in addition to these concepts, we have the dimension of valence, which *is* specifically affective in nature. It is this dimension that helps to focus the set as a whole on the domain of emotions, because one's senses of inner space, social connectedness, duration, etc., become modulated by one's sense of goodness or badness. In this way, the overall set of dimensions should cover the full range of human experience whilst remaining relatively focused around the emotions.¹⁵ It is in consideration of the generality of these concepts that we can be fairly sure that no more dimensions are likely to be needed, or least none that do not overlap to some extent with those already selected (though one could perhaps drop all of the dimensions and find a larger set of narrower terms).

The second respect in which the selected dimensions are homogeneous concerns their targeting of the intentional object of the emotion. I have already noted that the aim of this analysis is to generate a model that can apply to emotions in whatever form they take (feelings, behaviours, appraisals, etc.). This leads me to prefer abstract definitions. Yet one can still specify that each of the dimensions should present some meaningful *information* to the subject. That emotions have intentional meaning is perhaps the only consistently endorsed position in the philosophical literature on the emotions (e.g. de Sousa, 1987; Goldie, 2000; Prinz, 2004; Deonna, 2006; Solomon, 2007; Teroni, 2007; Döring, 2009). Thus, for each emotion concept, one should be able to ask how things are given to the subject by each dimension.

Note that the intentional object of the emotion need not be its eliciting conditions, but whatever the subject happens to focus on during the emotional episode. Note also that this need not require conscious experience. One's unconscious behaviour for instance could still be responding to a threat, and in this sense presenting the world as dangerous or one's body as relatively unprotected. Similarly one's bodily feelings could indicate a sense of weakness or vulnerability. However, what this sort of definition does rule out is describing those behaviours or feelings as mere responses, without a sense of what the response entails about the status of the subject. Thus, although the dimension definitions I outline are broad enough to apply to the various ways in which emotions are manifested, they remain focused on the *meaning* of the emotion.

4. The emotion dimensions

The eight selected emotion dimensions are now defined in detail.

4.1. Valence (attracted–repulsed)

As I have mentioned above, the overlap between arousal and valence led me to discard the arousal dimension. Though one might argue that the valence dimension should be discarded instead, I was persuaded by the observation that the arousal dimension overlaps with most other dimensions that one can think of. Its generality is a positive hindrance when attempting to efficiently differentiate the field. I was then finally convinced by the prioritization of valence in various factor-analytic studies.

I have also noted that I did not wish to prejudice either the behavioural or felt aspects of emotions with a definition of valence that referred directly to either. Russell (2003) amongst others appeals instead to ‘simple hedonic tone’. I must confess that I hardly know what is meant by ‘hedonic tone’, let alone ‘simple’ hedonic tone. It sounds like a fancy way of saying ‘pleasurable’. Moreover I sincerely have no idea what simple hedonic tone feels like. On introspection I find only various particular sensory pleasures, all of which are contingent upon the context. Sweet tastes for instance become decidedly non-pleasurable when one is nauseous from having eaten too many sweets. Perhaps pain is intrinsically unpleasant, though people with pain asymbolia claim to no longer ‘suffer’ pains despite having the same sensations (Grahek, 2007). It is hard to know what to make of these claims, but it looks like sensations and valence can be distinguished, even if a given qualitative sensation can seem immediately good or bad.

Instead I propose a strictly functional definition of valence, defined as any response to the detection of a stimulus which is designed to increase or decrease the presence of that stimulus. In this way the response presents its object as attractive or repulsive. For example, if one feels pain, then one’s body will react to ameliorate the source of pain either by removing one’s body from harm’s way, initiating healing processes, or releasing pain-relieving chemicals. Similarly, if one tastes something pleasant, then one will in general behave in ways that increase the presence of that taste, such as eating more or ensuring one has the money to acquire more in the future. Again, if one achieves an important goal or has one’s self-worth confirmed, then one may be inclined to orient one’s attention towards one’s success by thinking about it a lot, or to preserve whatever one has attained (a milder form of attraction). The valent response can take the form of internal physiological responses, instrumental actions, expressive or verbal behaviour, or the orientation of attention. It can occur in moments or endure for many years. Thus, although this definition is similar to Roseman’s (1984; Roseman & Evdokas, 2004) dimension of appetitive–aversive, it is not identical since it is not exclusively focused on reducing pains and increasing pleasures.¹⁶

With this abstract definition, we can also avoid the problem raised by the observation that sometimes ‘positive’ emotions involve ‘negative’ responses. For instance, critics point to certain cases of romantic love in which the subject will at times avoid the loved one. Yet, in the case of ‘playing hard to get’, we assume that the lover’s avoidance behaviour is ultimately designed to increase the presence of the loved one in his or her life. The loved one is thereby a positively valenced stimulus, a source of attraction, regardless of the intermediate strategy used to regulate this stimulus. Alternatively, if the lover is simply too overwhelmed to face the loved one, then we can fairly describe this as the consequence of a negative, repulsed emotion, anxiety for instance, which can sometimes be part of the narrative of an enduring state like love. Here the longer-term state would be mapped as fluctuating in valence as the subject progresses through time.

4.2 Personal strength (powerful–weak)

The dimension of potency, control or power has been popular since Osgood’s (e.g. 1957) general analysis of affective structure in the meaning of lexical items. In particular, it is an extremely useful way to distinguish the emotions of fear and anger, which typically have equal valence. However, the notion is often ambiguously defined. Scherer, Dan & Flykt (2006: 93), suggesting an alignment with Scherer’s appraisal dimension of ‘goal conduciveness’, similarly note a lack of homogeneity. As in the case of valence, different interpretations could potentially confound experimental results. Thus I suggest that we split up potency/control/power into more clearly defined dimensions. First, let us identify a dimension of power, which we must distinguish from mere intensity of feeling. A ‘powerful’ feeling can be easily misconstrued as merely a ‘strong’ feeling rather than a feeling of strength. But, as I argued in my discussion of the arousal dimension, intensity of feeling is something that should be equally applicable to all dimensions. On the definition I prefer, someone in a state of intense panic would be judged as extremely weak, despite their generally intense activity and high levels of physiological arousal. Again, distinguishing this from intense feelings of strength allows us to recognize one aspect of arousal.

We can further reduce power with the help of an example. Where on the power dimension would we place an enraged prisoner struggling against his chains? On one reading, he lacks power because he is completely unable to free himself, to achieve his desires. He might lack even the ability to move. Yet, on another reading, his energetic struggle, straining muscles and shouts of rage suggest an extremely powerful state. On the basis of this sort of

example (and anger in general) I think we should distinguish power from the sense of freedom. Power, and its opposite weakness, is analogous to a read-out of battery-level on an electronic device. It is a sense of one's energy and strength, one's internal reserves for action and potentially the environmental and social supports that give one the strength to endure. It is signalled by secure postures, a steady voice and self-defending appraisals. This sense of power then feeds directly into a sense of resilience or resistance to the vicissitudes of circumstance. In this sense the prisoner is powerful.

4.3 Freedom (*free-constrained*)

Meanwhile freedom, and its opposite, constraint, here signify the capacity of a subject to get what he wants, the sense of space or the openness of the world to his goals. The sense of freedom is signalled by a more relaxed posture, a greater *variety* of activity, or impulsive behaviour in extreme cases. The sense of freedom can also be generally associated with our capacity for affordance perception, the manner in which, when perceiving objects, we also perceive the ways in which they can be manipulated (cf. Gibson, 1979). So given this definition, our prisoner may be extremely high on the power dimension but he would be extremely low on the freedom dimension.¹⁷ The dimension of freedom is also useful in distinguishing a certain kind of righteous anger from joy, where both may be equally positive and equally powerful, but where joy involves a much greater sense that the world lies open before one.

This reduction of freedom and power to two dimensions still leaves out one significant source of potency, which is a feeling of dominance (and its opposite, submissiveness) over one's physical or social environment, including the relative tendency to aggressive behaviour. I think that dominance is a complex case. When one is unquestioned master of a situation, then one dominates that situation. In this respect one can do whatever one wants, and one has a sense of affordances of a social or environmental nature (i.e. freedom). At the same time, however, the support that the environment offers is one that increases one's strength.

Similarly when one is acting submissively, there is a sense in which one is receptive – one is not actor, but acted upon – negating the sense of freedom. But simultaneously one's receptivity may be a matter of seeking help or the increase of resources to boost one's power level. Thus I regard dominance not as definitive of either the power or freedom dimensions but as an example case in which both dimensions have been combined. Depending on exactly what aspects of the situation are emphasized, we might apply either or both dimensions.

4.4 Probability (*certain–uncertain*)

I have already mentioned the dimension of predictability suggested in Fontaine et al. (2007). The best interpretation of this dimension seems to be the sense in which the event that triggered the emotion was predictable or not. For instance the predictability of someone's insulting behaviour makes me sad. However, it is more central to the experience of this emotion to focus on the insulting behaviour itself. And in general the trigger (predictable or not) of an emotion need not be its focus. For example to see a highly familiar (and hence predictable) school tie might send one off into reveries about one's school days, while the school tie itself is long forgotten.

Instead of predictability then, I suggest a related but more abstract dimension of probability. Similarly to several other theorists (Roseman, 1984; Smith & Ellsworth, 1985; Scherer, Dan & Flykt, 2006), this is described as the degree to which the intentional focus of the emotion seems certain or uncertain. It is important to note, however, that this concept need not refer to the anticipation of some event prior to its occurrence. Instead one can have a more general sense of contingency. One can consider the degree to which things could go differently or could have gone differently. To what extent are alternatives available? This is possible even if it does not occur to one to consider an event's contingency until long after the event, or indeed if one acknowledges that one could never have realized this contingency at the time.

The sense of contingency is important for characterizing emotions like thankfulness/gratitude, regret, relief and worry. For instance an important aspect of regret is the sense that one could, or should, have prevented whatever happened. Similarly one worries about whether or not a future event will actually occur, or is relieved when the unwelcome possibility is averted. Moreover at the other extreme we find an interesting class of emotions characterized by a sense of inevitability, such as doom, optimism, pessimism, the feeling of doing something for which one was 'destined' or the need to bow to tradition. Overall, this dimension can be associated with our capacity for counterfactual reasoning, essential to our sense of causation. It is also signalled by the degree of resistance behaviours or the openness to alternative courses of action.

4.5 Intentional focus (*generalized–focused*)

Accompanying the concept of probability in our understanding of the causal nature of the world is the sense of generality, whereby one differentiates the degree to which a specific cause is responsible for one's status. At the extreme of generality, we find states like intense paranoia or confidence

(assuming episodic states of such rather than dispositions).¹⁸ We may also use this dimension to distinguish moods from emotion episodes which, it is sometimes claimed (e.g. Prinz, 2004: 182–8), are about everything (one's life in general) rather than nothing.¹⁹ Meanwhile some of the emotions most associated with focus are surprise, shock, disgust, pride, relief and romantic love. The traditional concept of romantic love for instance may target its object so exactly that intuitively one could not love another even if that person were qualitatively identical to one's beloved in physical and mental characteristics (i.e. the kind of case depicted in the film/book *Solaris*).

Overall, this dimension is most relevant to the way one orients one's attention within the emotion episode. In particular, does one's emotion target one or many objects? It is the difference between focusing on a single fault and remembering all the times one has been wronged (our emotions often fluctuate in intentional focus in this way). Or it is the difference between having some specific enemy or resentment towards everyone in a social group. Similarly one's responses to the world can signal a general or focused attitude: the difference between rage towards some particularly detested object and a consistently destructive attitude, for instance.

Note also that, while extreme generality and focus correspond to another aspect of emotional intensity, neither extreme necessarily indicates intense bodily activation. On the extremely focused side, one might have a mild worry about something very particular, comparable to a small but attention-grabbing injury to one's little finger. On the generalized side, one might have an extremely nebulous uneasiness about one's situation.

4.6 Temporal flow (future directed–current–past directed)

The temporal nature of the emotions is an effective way to differentiate the field and highly suitable for mapping the dynamic nature of the emotions. As such I suggest two dimensions – one of temporal orientation and one of temporal duration – which between them are very helpful in differentiating our emotion concepts. Specifically the dimension of temporal orientation is an efficient way to distinguish emotions like fear and sadness. These emotions may be identically valenced, constrained and weak; yet sadness is prototypically past directed, where fear is prototypically future directed (at least in English). In between these two extremes, we also recognize a neutral 'current' point, in which emotions like surprise can be found.

Note that we can apply this dimension to inner feelings as well as behaviours by recognizing the extent to which these things seem to build towards some climax or fade away. Such feelings can indicate the meaning of an

emotion, particularly the recognition that an urgent response is called for, or the seriousness of the situation.

4.7 Temporal duration (enduring–sudden)

Alongside the dimension of temporal flow, a dimension of temporal duration helps to distinguish states like surprise and shock (where shock is more enduring), as well as long-term dispositions or attitudes from more episodic states, e.g. the difference between an episodic loving feeling and the more enduring disposition towards caring for another.

Overall, this dimension can range from a momentary blip in arousal to an emotion disposition that lasts a lifetime. Note also that, because the concept of disposition is commonly employed to explain how a person can have a single emotion towards the same stimulus over several years, we need not worry so much that one could not have an extremely enduring emotion which is simultaneously extremely powerful or constrained (i.e. one simply could not have the energy for it). We need only recognize that, to the extent that one can be attributed a single emotion over an extremely long period of time, it is possible for one to feel weak at the knees *every time* one sees a spider or feel incredibly constrained every time one considers one's mortality. Apart from the mere duration of emotional activity, we can also associate the different extremes of this dimension with our attunement towards novelty (suddenness) and the process by which we develop habitual responses (enduring).

4.8 Social connection (connected–disconnected)

Finally, although appraisal-based models such as Ellsworth & Smith (1985), Oatley & Johnson-Laird (1987) and Scherer, Dan & Flykt (2006) recognize the importance of social relations in emotions to some extent, it is surprising that a dimension of social connectivity is not commonly employed (though see Davitz, 1969).²⁰ It is a very easy way to divide the field of emotions, helping us to differentiate emotions like love, jealousy and hatred. That is, love is prototypically an intimate, socially connected state, whereas jealousy is disconnected to some extent (though seeking greater connection) and hatred is an extremely disconnected state.

On this dimension, states like shame, guilt or embarrassment should be interpreted as (at least mildly) disconnected. Though those undergoing these emotions may be particularly sensitive to the attitudes of others and desirous

to bond with others, these emotions indicate a failure of social bonding. One feels oneself to be on a trajectory towards a greater disconnection, which one must then correct. Social connectivity is basically associated with our ability to empathize with others, but at an intense level of connection this is also a matter of *intimacy* with others. Our capacity to calculate social status should then be regarded as a combination of this dimension and the dimensions of power and/or freedom.

Note also that an emotion involving extreme social connection need not be a positively valenced state. One could, as a group, be extremely repulsed by some other group. Or, more unusually, one might love someone so much that one feels compelled to kill them (or sacrifice oneself).

Finally, asocial emotions like the disgust for rotting food qualify as neutral on this dimension. One's relatedness to others is simply not information that is given by these sorts of emotions; they do not make one more or less socially connected. It is on this basis that quite a fundamental distinction can be given between the class of social emotions and the class of asocial emotions. Often this boundary is not emphasized in the English concepts of emotions like fear, anger and sadness. As observed in the results presented below, however, distinctions are often made on this basis in other cultures.

5. Tests and results

These results demonstrate some of the ways in which the eight-dimensional model of emotion concepts can be used to distinguish emotion language. Of course more robust confirmation will rely on detailed comparisons with other-dimension models, not just in the field of emotion language but also behavioural observations and experiential self-reports. Given the priorities of this model, it is also important to confirm whether ordinary subjects can intuitively and consistently apply the definitions provided. We are interested not only in pragmatic applications here but also in the extent to which the model assists us in *understanding* the nature of specific emotions.

5.1 Examples of differentiated emotion terms within a language (English)

Figures 1 to 4 provide examples of how the dimensions can effectively differentiate emotion concepts within a language like English. The specific mappings are based purely on my intuitive grasp of these concepts, and as such are open to challenge or more robust empirical confirmation. The point

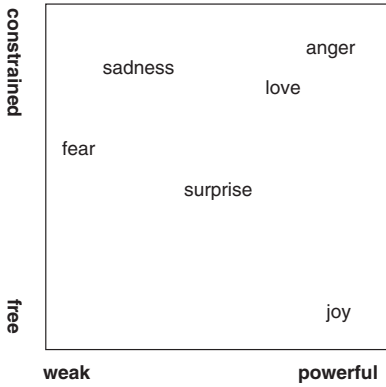


FIGURE 1

Emotion terms of the basic families (Shaver et al., 1987: 1061) differentiated by the dimensions of personal strength and freedom

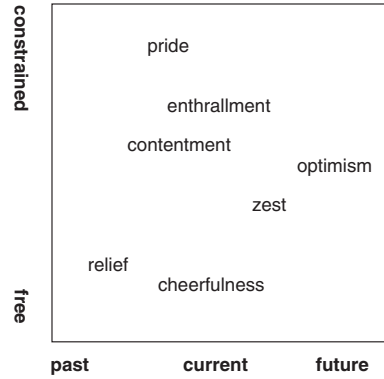


FIGURE 2

Emotion terms within the joy family (Shaver et al., 1987: 1061) differentiated by the dimensions of freedom and temporal flow

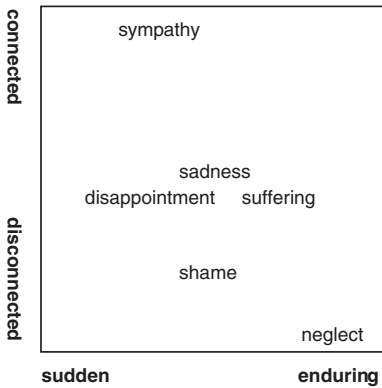


FIGURE 3

Emotion terms of the sadness family (Shaver et al., 1987: 1061) differentiated by the dimensions of social connection and temporal duration

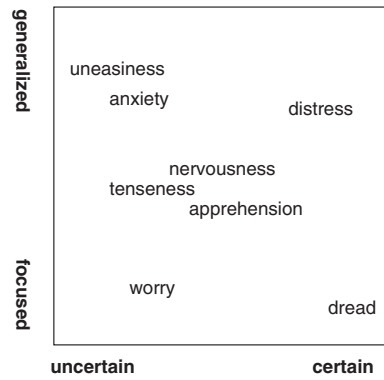


FIGURE 4

Emotion terms within the nervousness subclass (Shaver et al., 1987: 1061) differentiated by the dimensions of intentional focus and probability

here is merely to show that such differentiation is possible. The emotions terms were taken from Shaver et al. (1987) and correspond to three levels at which emotion terms are classified in their system, ranging from the broadest emotion families to near-synonymous terms within a subclass.

For simplicity of presentation, in each case two dimensions were selected that seemed effectively to differentiate the overall field.²¹ Naturally, were all eight dimensions employed, far more effective distinctions could be made, though this becomes progressively harder as one moves towards the extremely subtle distinctions within subclasses of terms. Within the nervousness subclass for instance, all of the emotion terms would be quite similarly future directed, weak, constrained and repulsed (and neutral on social connectedness without further details). Yet anxiety is typically more enduring than uneasiness, tenseness is slightly more powerful than nervousness, and apprehension is slightly more future directed than tenseness. None of these differences would be captured by the traditional valence or arousal dimensions.

Our capacity to be responsive to these sorts of differences helps to confirm that each of the dimensions outlined is *necessary* for distinguishing our emotions. We are able to recognize the difference between two emotions that are identical in most respects, except that one involves a *slightly* greater sense of imminence, or generality, or attraction, and so on. Typically these subtle differences do not merit a distinct label, but they are an important part of the meaning conveyed by the emotion. Then, at the boundaries of our conception of an emotion, a subtle dimensional difference can suffice to make us appeal to one label over another.

5.2 Examples of differentiated emotion terms across languages

In addition to characterizing and differentiating terms within a single language, the dimensions can be equally employed for cross-cultural comparisons. Needing an arbitrary set of non-English emotion terms to demonstrate this, I have used the set of non-English terms referenced in James Russell's well-known paper 'Culture and the categorization of emotions' (1991). Terms could be selected quite strictly according to whether a description is provided that is greater than a one-to-one correspondence with an English term. Descriptions ranged from a couple of English terms (e.g. 'covers both shame and fear') to highly literary descriptions (see for instance *litost* or *amae*). Having generated a set, I could then confirm or disambiguate the descriptions by reference to the original sources as well as, in some cases, descriptions by other researchers. However, it should be recognized that, given the indirect sources, some distortions in definition are possible. The point is primarily to show that, whatever definitions are given, the dimensions can be usefully applied.

In total there were 43 terms originating from 18 distinct cultures. I have provided a sample of 10 of these (from 10 different cultures) in Table 1 (the complete list appears in the Appendix). These samples were selected to demonstrate

TABLE 1
 Ten sample terms originating from ten distinct cultures selected to demonstrate that the
 dimensional extremes of each of the eight dimensions are all strongly indicated by at least one of the terms

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Nginyi-warrarringu (Pintupi of Australia)	A sudden fear that causes the person to stand up to see what caused it.	sudden, focused, attracted, current, uncertain	free, weak	social connection	Morice, 1978 (Russell, 1999: 431)
Tekajut (Bali)	Sharply distinguished from fear, it is the unpleasant and upsetting response to the unexpected. Unlike startle, however, it need not require suddenness. Is considered beyond choice or personal responsibility.	repulsed, certain, weak, constrained, current	focused	social connection, temporal duration	Wikan, 1989 (Russell, 1991: 432)
Niviuq (Utku of Canada)	Love for those who are charming or admired.	attracted, connected, focused, enduring	weak, constrained, current, certain	—	Briggs, 1970: 313 (Russell, 1991: 431)
Amae (Japan)	A passive, pleasant feeling of dependence on someone, cf. the feeling Catholics have towards Mary, the mother of Jesus, or an infant has sucking the sweet milk of its mother.	attracted, weak, connected, constrained, focused	current, certain, enduring	—	Doi, 1973, (Russell, 1991: 432)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Bingung (Java)	A commonly used word. Refers to being upset, confused, and lacking a sense of direction.	weak, uncertain repulsed, generalized repulsed, constrained	free, enduring current, disconnected	—	Geertz, 1959 (Russell, 1991: 432)
Diper-malukan (Indonesia)	Shame or embarrassment brought on by someone else's deeds.	focused, connected, past directed, uncertain	weak	temporal duration	Keeler, 1983: 153 (Russell, 1991: 431)
Amok (Malaysia)	Refers to an intense state characterized by delusions and violent assaults directed against friend and foe alike, followed by amnesia and deep sleep.	disconnected, powerful, free, repulsed, current, generalized future directed, repulsed	enduring	probability	Carr & Tan, 1976 (Russell, 1991:431)
Metagu (Ifaluk of Micronesia)	Fear or anxiety about future events. Also covers guilt.	weak, uncertain constrained, connected	enduring, generalized	—	Lutz, 1980: 223 (Russell, 1991: 431)
Awumbuk (Baining of Papua New Guinea)	A sadness, lassitude, tiredness, and boredom caused by the departure of visitors, friends, or relatives.	repulsed, past directed, weak, constrained certain	disconnection enduring, generalized,	—	Fajans, 1983: 177 (Russell, 1991: 432)
Pe'a pe'a (Tahiti)	A generic term for feeling ill, troubled or fatigued. Covers sadness, longing, loneliness, depression, though regarded more as a physical illness.	weak, constrained, repulsed current, enduring	generalized, certain,	social connection 429, 431)	Levy, 1973: 303 (Russell, 1991:

that the dimensional extremes of each of the eight dimensions (including, in the case of temporal flow, the ‘current’ position) are all strongly indicated by at least one of the terms. This helps to confirm that all of these dimensions play a significant role in capturing the way we conceive of emotions cross-culturally. For instance we see that the traditional models would not capture the sense of generality that is important to several of the emotion concepts listed. Note, however, that these results do not confirm all of these dimensions as *necessary* for distinguishing our emotions, since it is possible that some dimensions are redundant for differentiating a given field (necessity can only be confirmed by the sorts of subtle cases described in the previous section).

Moreover, looking at the complete list we see that the social connectivity of 10 out of 43 of the emotion concepts is either neutral or not indicated, similarly for the temporal duration of 12 out of 43 of the emotions, the probability of 5 out of 43, and the temporal flow of 3 out of 43.²² In some cases, this is clearly a consequence of broad definitions. It is also not particularly surprising in the case of temporal duration, since in English the duration of an emotion is one of its most variable properties, and typically where temporal duration is not indicated then either temporal flow or probability applies instead. With regard to social connectivity, however, there does seem to be an important distinction between the social and asocial emotions.

5.3 *Subtle expressive language*

Another interesting way to test the discriminatory powers of the dimensions is to use them to analyse prose, which is more impressionistically suggestive of emotions, since these works may well express affective states that have no emotion label.²³ To give an example, I have analysed a poem by W. B. Yeats (see Table 2).

There are several explicit emotion terms in this poem – hate, love, happiness – but these are all negated, indicating by contrast a state of more neutral valence. The narrator only affirms a ‘lonely impulse of delight’ – hardly a common emotion label – which the dimensions are completely able to characterize as sudden, free, attracted and disconnected.

Table 2 shows how we are able to apply the emotion dimensions line by line, serving to capture various nuances of expressive meaning. Both the poem and the dimensional values can then be quite clearly combined in five groups, each of which expresses a distinct affective state. None of these affective states is stereotypical: We find a sense of being fated, equanimous, a confident sense of being rooted in a culture (I would not call it patriotism

TABLE 2
Analysis of emotion terms in a poem by W. B. Yeats grouped by dimensional value

<i>An Irish airman foresees his death</i> (William Butler Yeats)		
<i>I know that I shall meet my fate</i>	strongly certain, strongly constrained, future	fated
<i>Somewhere among the clouds above;</i>	mildly focused, mildly free	
<i>Those that I fight I do not hate</i>	powerful, neutrally valent, disconnected	equanimous
<i>Those that I guard I do not love;</i>	powerful, neutrally valent, disconnected	
<i>My county is Kiltartan Cross, My countrymen Kiltartan's poor;</i>	connected, focused connected, focused, mildly weak	rooted
<i>No likely end could bring them loss</i>	certain, powerful, future directed	
<i>Or leave them happier than before.</i>	future directed, neutrally valent	
<i>Nor law, nor duty bade me fight, Nor public men, nor cheering crowds, A lonely impulse of delight</i>	strongly free, disconnected strongly free, disconnected sudden, free, attracted, disconnected	lonely impulse impulse of delight
<i>Drove to this tumult in the clouds;</i>	attracted, free	
<i>I balanced all, brought all to mind, The years to come seemed waste of breath, A waste of breath the years behind</i>	generalized future directed, enduring, generalized, repulsed past directed, enduring, generalized, repulsed	existential repulsion
<i>In balance with this life, this death.</i>	current, generalized, enduring	

since this to my mind would require a greater sense of devotion), the 'lonely impulse of delight' and then at the end a very generalized and enduring repulsion (i.e. about life), which I have labelled 'existential repulsion'.

Finally we can try to sum up the affective tone of the poem as a whole. We can do this in two ways: either by tracing the fluctuations along the various dimensions throughout (from constraint to freedom, from focused to generalized, from disconnection to connection back to disconnection again); or by averaging the values on each dimension overall. If this latter method is employed then we arrive at a state that is strongly certain, strongly disconnected, strongly generalized, enduring, powerful, free, mildly future directed and mildly repulsed. The combination of power, freedom and repulsion is quite unusual. It indicates an aloof attitude, almost carefree, which is only

intensified by the strong sense of disconnection. The poem also indicates that this state is quite profound in its generality and endurance. The sense of certainty further intensifies this impression. Altogether this particular combination of dimensions reads like an almost Zen-like detachment from life. Reading the poem in a less technical manner, the narrator expresses perfect equanimity in the prospect of a ‘wasted’ death. Yet the narrator is not merely whimsical. He seems like a strong, rooted sort of person. The dimensional analysis coheres extremely well with this interpretation.

5.4 Exploring the dimensions

In general we can use the dimensions to explore what sorts of affective states are possible. For instance a state of extreme power, freedom, attraction, certainty, generality, connection and endurance which is also current or future directed seems like one of the most blissful emotions imaginable (though the concept of ‘bliss’ seems less powerful and less essentially connected), what one might feel on being admitted into the heavenly host. In contrast a state of extremely sudden and current weakness, constraint, repulsion, uncertainty, generality and disconnection looks like a momentary feeling of horror, that the world is an utterly nightmarish place. We also find some unusual combinations, such as extreme power and uncertainty, perhaps the feeling that one has by pure chance defeated one’s enemy. Or the combination of intense freedom and connection, a sense of group solidarity that promises the ability to achieve many things.

A related way to test the usefulness and validity of these dimensions is to observe whether, when given a set of specific measures on the different scales, subjects are able to identify the same emotion term. For instance, if an emotion is described as extremely past directed and constrained, but quite attracted, quite generalized and fairly weak (and is neutral on other dimensions) will subjects commonly identify a sense of nostalgia?

6. Theoretical implications

A certain number of implicit theoretical assumptions accompany the use of a dimension model to describe the emotions. I have already noted an assumption that we conceive of emotional states as analogue entities in several respects. I have also assumed that we are generally concerned with the intentional focus of the emotion. But more importantly a model like this *defines* emotions as phenomena accurately captured by the terms of the dimensions and moreover as varying along these dimensions as they

progress. We must therefore carefully appraise to what extent this model is reckoned to capture the reality of emotions.

In particular we note that the dimensions do not necessarily capture everything about an emotion concept, only what is required to distinguish it from other emotions. For instance jealousy might be identified without having to refer to infidelities. Nor need one refer to the feeling of sickliness that often accompanies this emotion.²⁴ These features did not merit their own dimensions because they were too specific. For example the concept of infidelity overlaps with social connection but does not discriminate the field as effectively because of the large number of emotions to which it is irrelevant. The rejection of such specific dimensions may thereby suggest that some details are not essential to an emotion's identity.

Again it seems that the dimensions can also cover our concepts of various kinds of affective states (dispositions, moods, bodily sensations and so on). In this case, with regard to the question of how these states are differentiated from emotions, one might think that this is a matter of degree. Emotions are perhaps more episodic – more generalized than mere bodily sensations, while more focused than dispositions – but there need not be any fundamental differences.

In both cases, drawing such a conclusion would be a mistake, at least from the evidence that this conceptual model provides. It is important to note that the dimensions may grasp only certain significant boundaries of an emotion, and not its core identity. One might say that the dimensions represent a certain level of the reality of emotions – the field of affective phenomena as a whole. At this level we can take an abstract and structural perspective, identifying emotions by picking out certain abstract patterns rather than very specific biological functions, patterns corresponding to the fluctuations within the elusive mental realm of 'well-being' or 'how things are going'.

So can we say that generally sadness *is* a past-directed, aversive, constrained and weak state? I believe so. But this description is a summary.²⁵ What underlies that summary is the synchronized functioning of often dozens of distinct physiological, behavioural and cognitive functions. In the definitions I gave of the various dimensions, I noted various component functions that are plausibly responsible for outputs on those dimensions. This is because the independence of the dimensions suggests that distinct mechanisms can be identified. But it is not necessary that these mechanisms are responsible for every instance in which a value is outputted on the corresponding dimension. Rather we may point to clusters of bodily or behavioural or neural functions that track different dimensions, observing that some emotion-generating functions (like muscle tension) may contribute to

more than one dimension at the same time. It is hoped that future research will identify in detail which functions correspond with which dimensions. This should make a significant difference in our capacity to measure specific emotions, helping us to move beyond the mere recognition that someone is aroused, by targeting aspects of emotional states that make all the difference for the subjects undergoing them.

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Notes

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1. Words like 'dreary', 'disgraced' or 'dazed'. See Ortony, Clore & Foss (1987) for several categories of examples.
2. For a good review of the history of dimension models see Smith & Ellsworth (1985).
3. Capturing emotional experience is not easy of course, but this is often where the success of artistic expression resides.
4. But how about 'I'm dying and this is the best/worst thing that's ever happened to me'? I imagine that *in extremis* where one's body is not working flat-out in the struggle to maintain life, i.e. is finally going through the stages of shutting down, then one's sense of valence will be equally impaired.
5. Though not identical, since Plutchik's model is a combination of dimensional and basic emotion schemas, where his basic emotions are arranged in a circle according to their relative similarity rather than according to their positions on two dimensions.
6. Even in the case of curved space, for instance on the 2-dimensional surface of a globe, it remains possible to occupy any latitude, whilst simultaneously occupying any longitude, and vice versa, except at the poles, where longitude becomes meaningless (our emotion dimensions will be similarly bounded).
7. Scherer, Dan & Flykt (2006: 93) suggest that the activity dimension can be correlated with the appraisal of a mismatch between goals/expectations and the current state, such that it demands some sort of aroused response. The connection is plausible, and the two sides of the comparison are suitably similar in generality, but this generality suggests that the mismatch with expectations does not correspond to a single dimension. It looks more like a general condition for the occurrence of an emotion, rather than a way to differentiate within the field of emotions.
8. Examples include, 'wanted to be in command of others', 'person was at the centre of attention'.

9. See Wilson (2004) for extensive criticism of this methodological bias. See also Youngstrom & Green (2003) for discussion of the importance of looking at groups other than college students.

10. Depending on one's definition of predictability, see discussion in section 4.4 below. Note that the label is an interpretation by the researchers of what unifies several features grouped together by factorial analysis. It is not an unreasonable choice since the features 'unpredictable event' and 'consequences predictable' are two of most significant loadings on this dimension. Yet given that 'had the jaw drop' vs. 'experienced the emotional state for a long time' score the highest on this dimension, a label of 'temporal duration' is at least as appropriate (cf. my adoption of this dimension below).

11. Solomon even missed one – the degree to which an emotion is adaptive, according to which most emotions might be said to be positive (thanks to Geraldine Coppin for this observation).

12. Though note that, if independent emotion generating components underlie the dimensions, then it is possible that in some cases not all such components are in operation.

13. This is even the case if the basic emotions model is correct, since, although we would expect terms to bunch up in families, these models typically allow that the basic emotions can be blended in various subtle ways.

14. One could also get a more even spread by removing the emotion of surprise!

15. Similarly, were I to select dimensions for some other feature of human life, such as one's economic status, I might well equally employ the same fundamental concepts listed above, but I would drop valence and start with a dimension of relative richness.

16. Moreover Roseman appeals to an additional dimension of a situation being motive consistent–inconsistent, where my definition of valence covers both sorts of cases.

17. Of course, as the prisoner continues to struggle, he may realize the futility of his actions, and his sense of futility may well deflate his sense of power, most likely because he realizes his loss of environmental supports and accordingly his capacity to continue struggling indefinitely.

18. An extreme degree of generalization could help to indicate pathological affective states (thanks to Anna Ogarkova for this observation).

19. This may indicate a subcategory of emotions rather than a distinct kind of affective state.

20. For a long time I considered using two dimensions to differentiate social emotions: one of social sensitivity (being sensitive to the emotions of others) and one of social similarity (being in the same emotional state as others). However, it became clear that one could not be extremely socially similar at the same time as extremely socially insensitive.

21. In general it may be considered impractical for subjects or experimenters to rate emotions on all the dimensions given in this model. However, experimenters can instead focus on one or two dimensions that are relevant to their investigative interests. For instance, if one is chiefly interested in measuring anger and happiness, then one can narrow one's focus to the dimensions of freedom and valence.

22. The single case in which valence is neutrally indicated is the !Kung emotion *kua*, where it is highly ambivalent or mixed rather than irrelevant. Similarly for the sense of personal strength, we see only one ambivalent case, where the Canadian Inuit emotion *hatuq* is supposed to cover both kindness (where one has the ability to help others, indicating relative strength) and gratitude (where one is receiving help from others, indicating relative weakness).

23. I am also confident that most, if not all, of these dimensions will be applicable to abstract music.

24. Notably in Mandarin, jealousy is *chī cù*, translating literally as 'to eat vinegar'.

25. Similarly this description could itself be summarized as the feeling of loss (cf. Lazarus, 1991).

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APPENDIX
Eight dimensions applied to the non-English terms in Russell (1991)
 (terms are ordered alphabetically by country, then by label)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Semteende (Fulani of Africa)	Commonly translated as shame or embarrassment, but someone is in this state if the situation is appropriate, whatever the person may or may not feel. Comparable perhaps to legal guilt. Covers both shame and fear.	repulsed, weak, focused, constrained disconnected	uncertain, past directed	temporal duration	Riesman, 1977: 129 (Russell, 1991: 430)
Gurakadj (Gidjingali of Australia)		repulsed, weak, constrained	disconnected, focused, uncertain, future directed	temporal duration	Hiatt, 1978 (Russell, 1991: 430)
Ngulu (Pintupi of Australia)¹	Fear of another seeking revenge.	future directed, repulsed, connected, focused, weak	constrained, certain	temporal duration	Morice, 1978 (Russell, 1999: 431)
Nginyi-warrarringu (Pintupi of Australia)	A sudden fear that causes the person to stand up to see what caused it. Worry over land or relatives.	sudden, focused, attracted, current, uncertain	free, weak ²	social connection	Morice, 1978 (Russell, 1999: 431)
Wurrkulinu (Pintupi of Australia)		connected, weak, constrained, uncertain, focused repulsed	enduring, future directed	—	Morice, 1978 (Russell, 1999: 431)
Watjilpa (Pintupi of Australia)	Worry that leads to physical illness. ³	weak, constrained, repulsed	enduring, current, connected	intentional focus, probability	Morice, 1978: 92 (Russell, 1991: 444)

(Continued)

APPENDIX (Continued)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Tekajut (Bali)	Sharply distinguished from fear, it is the unpleasant and upsetting response to the unexpected. Unlike startle, however, it need not require suddenness. Is considered beyond choice or personal responsibility.	repulsed, certain, weak, constrained, current	focused	social connection, temporal duration	Wikan, 1989 (Russell, 1991: 432)
Obhiman (Bengal)	Sorrow caused by the insensitivity of a loved one.	repulsed, weak, sensitive, disconnected, focused	past directed, constrained, uncertain	temporal duration	Russell, 1991: 426
Hatuq (Utku of Canada)	Covers both kindness and gratitude.	connected, attracted, focused, uncertain	enduring, current, free	personal strength (ambivalent)	Briggs, 1970: 326 (Russell, 1991: 431)
Ilira (Utku of Canada)	Fear of social injury. Also includes what in English might be termed respect.	repulsed, future directed, disconnected, weak, constrained, focused	enduring, uncertain	—	Briggs, 1970: 344 (Russell, 1991: 431)
Iqhi (Utku of Canada)	Fear of physical injury.	repulsed, weak, constrained, future directed, focused	sudden, uncertain	social connection	Briggs, 1970: 344 (Russell, 1991: 431)
Naklik (Utku of Canada)	Love for those who need protection, such as babies, puppies or the sick.	attracted, connected, focused, powerful, enduring	constrained, current, uncertain	—	Briggs, 1970: 323 (Russell, 1991: 431)
Nivuiq (Utku of Canada)	Love for those who are charming or admired.	attracted, connected, focused, enduring	weak, constrained, current, certain	—	Briggs, 1970: 313 (Russell, 1991: 431)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Litost (Czech.)	A feeling that is the synthesis of many others: grief, sympathy, remorse, and an indefinable longing, though can have a very narrow meaning. A state of torment caused by a sudden insight into one's own miserable self. First comes a feeling of torment, then the desire for revenge. ⁴	generalized, constrained, certain	current, attracted, powerful, enduring, connected	—	Kundera, 1980 (Russell, 1991: 426)
Diper-malukan (Indonesia)	Shame or embarrassment brought on by someone else's deeds.	repulsed, constrained, focused, connected, past directed, uncertain	weak	temporal duration	Keeler, 1983: 153 (Russell, 1991: 431)
Malu (Indonesia)	Shame or embarrassment brought on by one's own deeds. ⁵	repulsed, constrained, focused, disconnected, past directed, uncertain	powerful	temporal duration	Keeler, 1983: 153 (Russell, 1991: 431)
Amae (Japan)	A passive, pleasant feeling of dependence on someone, cf. the feeling Catholics have towards Mary, the mother of Jesus, or an infant has sucking the sweet milk of its mother.	attracted, weak, connected, constrained, focused	current, certain, enduring	—	Doi, 1973 (Russell, 1991: 432)
Ijirashii (Japan)	A feeling associated with seeing someone praiseworthy overcoming an obstacle. ⁶	connected, attracted, uncertain, focused	current, free, powerful, sudden	—	Russell, 1999: 426

(Continued)

APPENDIX (Continued)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Itoshii (Japan)	Longing for an absent loved one.	attracted, ⁷ focused, weak, constrained	connected, past directed, enduring, uncertain	—	Russell, 1999: 426
Bingung (Java)	A commonly used word. Refers to being upset, confused, and lacking a sense of direction.	weak, uncertain	free, enduring, current, disconnected	—	Geertz, 1959 (Russell, 1991: 432)
Iklas (Java)	A state of pleasant, or at least indifferent, frustration. ⁸	attracted, powerful	focused, certain, future directed	social connection, temporal duration	Geertz, 1959 (Russell, 1991: 432)
Isin (Java)	Covers shame, guilt, shyness, and embarrassment.	disconnected, weak, constrained, repulsed	focused, enduring, uncertain,	temporal flow	Geertz, 1959: 233 (Russell, 1991: 430)
Kaget (Java)	Refers to being startled by something that happens outside oneself, so that one becomes <i>bingung</i> .	sudden, weak, current, uncertain	free, focused, disconnected	—	Geertz, 1959 (Russell, 1991: 432)
Kua (IKung)	A combination of awe, respect and fear associated with the formally and ceremonially recognized milestones in one's life. Can also occur in response to danger, such as encountering a lion or walking alone at night. ⁹	weak, constrained, uncertain	focused, connected, future directed	valence (ambivalent), temporal duration	Shostak, 1983: 133 (Russell, 1991: 432)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Amok (Malaysia)	Refers to an intense state characterized by delusions and violent assaults directed against friend and foe alike, followed by amnesia and deep sleep.	disconnected, powerful, free, repulsed, current, generalized	enduring	probability	Carr & Tan, 1976 (Russell, 1991: 431)
Fago (Ifaluk of Micronesia)	Is felt when someone dies, is needy, is ill or goes on a voyage. Also felt when in the presence of someone admirable or when given a gift. Used in some situations in which English speakers would use love, empathy, pity, sadness and compassion, but not all such situations. ¹⁰	connected	attracted, focused, enduring, powerful, constrained	temporal flow, probability	Lutz, 1980 (Russell, 1999: 433)
Ker (Ifaluk of Micronesia)	Pleasant surprise. ¹⁰	sudden, focused, current, uncertain	powerful, free attracted, disconnected	—	Lutz, 1980: 188 (Russell, 1991: 431)
Metagu (Ifaluk of Micronesia)	Fear or anxiety of future events. Also covers guilt. ¹¹	future directed, repulsed, weak, uncertain, constrained, connected	enduring, generalized	—	Lutz, 1980: 223 (Russell, 1999: 431)
Nguch (Ifaluk of Micronesia)	Captures what in English must be said metaphorically as 'sick and tired' or 'fed up'. Also includes feelings of boredom and lethargy that are due, for example, to extreme heat, weariness or illness.	repulsed, weak, constrained, enduring, current, generalized	certain	social connection	Lutz, 1985 (Russell, 1999: 432)

(Continued)

APPENDIX (Continued)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Niyabut (Ifaluk of Micronesia)	Disgust associated with decaying matter rather than moral indignation.	repulsed, current, focused, constrained	sudden, weak, uncertain	social connection	Lutz, 1980: 183–4 (Russell, 1991: 431)
Rus (Ifaluk of Micronesia)	Unpleasant surprise. Also panic, surprise and fear that is due to confrontation with a present event.	sudden, repulsed, focused, current, weak, uncertain	constrained	social connection	Lutz, 1980: 188 (Russell, 1991: 431)
Song (Ifaluk of Micronesia)	Justifiable anger, but also indicates a state in which the person cries, pouts and inflicts harm on himself or herself, including suicide. Also disgust characterized by moral indignation. Sometimes sadness.	repulsed, power, constraint	focused, disconnected, enduring, uncertain	—	Lutz, 1980: 183–4 (Russell, 1991: 430, 431)
Awumbuk (Baining of Papua New Guinea)	A sadness, lassitude, tiredness, and boredom caused by the departure of visitors, friends or relatives.	repulsed, past directed, weak, constrained	disconnection, enduring, generalized, ^{1,2} certain	—	Fajans, 1983: 177 (Russell, 1991: 432)
Betang (Ilongot of Philippines)	Covers shame, timidity, embarrassment, awe, obedience, and respect.	weak, constrained, focused	current, repulsed, uncertain, connected	temporal duration	Rosaldo, 1983: 141 (Russell, 1991: 430)
Liget (Ilongot of Philippines)	Can be caused by insult or injury, also by a communal, all-night song fest; pride of accomplishment; or the death of a loved one. Can be manifested in irritability or violence, but also the sweat of hard work. ¹³	powerful, generalized	enduring, connected, past directed, attracted, free	probability	Rosaldo, 1980: 43–7 (Russell, 1991: 432)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Alofa (Samoa)	Covers love, sympathy, pity and liking. ¹⁴	attracted, connected	focused, powerful, constrained,	probability	Gerber, 1975: 3 (Russell, 1991: 1991: 431)
B'ona (Samoa)	Anger that is not expressed.	powerful, constrained	enduring, current repulsed, disconnected, focused, uncertain	temporal flow, temporal duration	Gerber, 1975: (Russell, 1991: 444)
Lotofa'-amaua-lalo (Samoa)	Submissiveness. Also a pleasant feeling — an absence of malice, anger, or resentment in situations of potential conflict in which these feelings might be expected to arise. ¹⁵	weak, connected, attracted, enduring	uncertain, generalized, constrained	temporal flow	Gerber, 1975: (Russell, 1991: 432)
Mata'u (Tahiti)	Fear of the future.	future directed, uncertain, constrained, repulsed, weak	focused	social connection, temporal duration	Levy, 1973: (Russell, 1991: 432)
Pe'a pe'a (Tahiti)	A generic term for feeling ill, troubled or fatigued. Covers sadness, longing, loneliness, depression, though regarded more as a physical illness.	weak, constrained, repulsed	generalized, certain, current enduring	social connection	Levy, 1973: 303 (Russell, 1991: 429, 431)
Ri'ari'a (Tahiti)	Covers many instances labelled as fear in English but not fear of possible future events. ¹⁶ Also a feeling of being mildly repulsed, as, for example, in response to food.	current, weak, repulsed, constrained	focused, uncertain, sudden	social connection	Levy, 1973: 307 (Russell, 1991: 432)

(Continued)

APPENDIX (Continued)

Term	Description of term	Strongly indicated	Mildly indicated	Neutral or not indicated	Reference
Okusaalirwa (Buganda of Uganda)	The grief of mourning or a friend's departure.	repulsed, disconnected, past directed, weak, focused	certain	—	Orley, 1970: 3 (Russell, 1991: 430)

1. Note however that Myers (1988: 607) describes Morice's definitions as 'misleadingly overspecific'.
2. Fear in general involves a sense of weakness. Though it is less obviously so in this case.
3. Morice's definition here also includes thoughts of country and relatives.
4. This description indicates a mixture of anger and sadness comparable to the Ifaluk emotion song. Yet the emphasis is quite different, seemingly quite powerful and attracted, indicated by longing and the desire for revenge, as well as more socially connected, indicated by the sense of sympathy or remorse.
5. Cf. Shaver, Murdaya & Fraley (2001: 210), where this is defined as 'shame, disgrace, mortification'.
6. Elsewhere we find this term defined as 'a feeling of empathy and pity associated with seeing someone weak but praiseworthy overcome an obstacle or do a good deed' (Araki, 1994, cited in Pavlenko, 2005: 82).
7. Note that, while this emotion may be said to be 'a bad thing' on some senses of valence, according to my definition desire-involving states such as these are attracted, since the response seeks to increase the presence of the stimulus.
8. Cf. Shaver, Murdaya & Fraley (2001: 209), where this is defined (spelt 'Ikhlías') as 'sincere devotion, complete conviction, full preparedness'.
9. Clearly a 'rite of passage' emotion, signalling an awareness of the importance of such events for one's future life and one's place in the community.
10. Though Lutz (1988: 112) also defines this as 'excited happiness', but such that one might sometimes avoid this emotion in social company.
11. Cf. Lutz (1983: 152). On closer investigation we see that it 'is the emotion considered most responsible for obedient and good behavior' (Lutz, 1982: 121), indicating a social and dispositional emotion.
12. Though the subject may well be able to recognize the specific cause of his emotion. To feel lassitude in consequence signals a mood-like attitude towards the world.
13. It is clear from this definition—as well as from Rosaldo's other descriptions—that *liget* signals a general sense of passion.
14. Cf. Mageo (1991: 408).
15. While it is not made clear in Russell's description, closer investigation into this term reveals that it is a dispositional state. Anthropologist Jeannette Marie Mageo provides this description: 'those who are *lotofá amaualalo* never place their seniors in a situation that impairs their authority. One informant gave the following example. A younger brother asks his *aiga* for permission to build a house on a piece of family land. An older sister then notices how nice the piece is and so she asks for it too. The brother who is *lotofá amaualalo* withdraws his request because his sister is the elder. On the other hand, if the sister is *lotofá amaualalo* she will relinquish the land, although by right of status hers is the better claim' (1991: 412).
16. I frankly find this description to be paradoxical. I can think of no cases of fear in English that are not centrally characterised by being directed towards the future, whether it is imminent or distant. Nevertheless the different Tahitian concepts of fear are well distinguished by the dimension of temporal flow.