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Semantic Primitives for Emotions: A Reply to Ortony and Clore

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We respond to four criticisms by Ortony and Clore (1989) of our semantic analysis of English emotion terms (Johnson-Laird & Oatley, 1989). We clarify how our theory enables people to speak of certain emotions that they experience without knowing their cause. We explain why emotions are best regarded as mental states with distinctive phenomenal tones—not “just” feelings, and how emotion terms can relate to terms denoting moods. Finally, we discuss an issue that distinguishes our theory from other contemporary cognitive theories: We claim that there is a small number of discriminably different basic emotions, and that the semantics of English emotion terms is comprehensible if these basic states are taken as unanalysable primitives.

INTRODUCTION

In their thoughtful commentary on our paper (Johnson-Laird & Oatley, 1989), Ortony and Clore (1989) raise interesting problems for our analysis of emotion terms, and indeed for cognitive theories of emotions generally. Several such theories have been proposed in recent years. Their goals have been (a) to give a natural scientific account of what emotions are and how they work, (b) to elucidate folk theories that different cultural groups hold about emotions, and (c) to explain the everyday language of emotions including the inferences that can be made concerning emotion terms in discourse. The issues now are to see both what is common among these theories, and what differentiates the theories from each other. We take the opportunity offered by Ortony and Clore's commentary to discuss these matters.

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Oatley and Johnson-Laird (1987) sketched the outlines of a natural scientific theory, and Johnson-Laird and Oatley (1989) used this theory to motivate a semantic analysis of emotion terms. We claimed that linguistic usage reflects folk theory and, more controversially, that certain postulates of the folk theory embodied in English terminology are correct in a natural scientific sense. So we argue that when people speak of emotions in English, they typically refer correctly to phenomenally distinct experiences of emotion that have both a cause and an object. For example, when a speaker claims to be afraid, the term "afraid" refers to a mental state with a distinctive phenomenal tone, just as the terms "hungry", "sleepy", "in pain" refer to states that are phenomenally distinctive. The speaker is likely to know the cause of the experience, and the emotion is likely to be directed towards something or somebody. Folk theories do not explain mechanisms of emotion any more than they explain mechanisms of hunger, sleep, or pain, but we claim that the folk theory of emotions embodied in English converges with scientific theory in identifying categories of analysis: There are psychological and physiological mechanisms of fear, anger, happiness, and other emotions. Such emotion terms will not ultimately be consigned to an historical waste bin along with "impetus" and "phlogiston".

In this brief account, then, we will consider three representative theories that contrast with our own. First, Mandler (1984) proposed one of the earliest of modern cognitive theories. He argued that emotions are increases in arousal that are cognitively labelled. They tend to be caused by interruptions of ongoing activities. According to this view, there are as many different kinds of emotion as there are labels. Nothing is gained by analysing emotion terms, because they can have no bearing on natural scientific theories.

Secondly, Frijda (1986), in probably the most influential view, argues that emotion is a script-like process. It starts with eliciting conditions which have a range of attributes. It continues with evaluations in relation to the individual's concerns. It causes physiological disturbances, and prepares the individual for action. Finally, it issues in expressions and actions. Frijda too is somewhat sceptical about the value of linguistic analyses.

Thirdly, Ortony and Clore have developed a theory which is perhaps the closest to our own. They started from a deliberately atheoretical stance, but were committed, like us, to analyse emotion terms. They made only general assumptions, and investigated the inferences that could be made concerning emotion terms. More recently, Ortony, Clore, & Collins (1988) have formulated a cognitive theory and it influences their commentary on our article. They argue that "emotions are internal mental states that vary in intensity" (p. 190). This initial definition is similar to ours. Ortony et al. (1988) also argue that emotions arise from evaluative cognitions, although

not necessarily conscious ones, and we again tend to agree, though we also note that emotions can sometimes be caused by drugs and suchlike, as we discuss below. Thereafter our paths diverge. Both in the book and the commentary, Ortony and his colleagues argue against there being a small set of basic emotions. There is, they claim, no objective way to decide if any set of basic emotions is correct. Ortony et al. say there are 22 emotions which are perhaps more basic than others. They argue that emotions are reactions that are either positively or negatively valenced, with the nature of each being determined by the cognitive construal of the eliciting situation. They assume there are three sorts of elicitor: Consequences of events, actions of agents, and properties of objects. Different eliciting conditions lead to different types of emotion, and each type consists of a family of closely related emotions. In their theory, a feeling that one has as a result of an event, say arrival of a legacy, is by assumption, distinct from the feeling that one has as a result of an action of an agent, say, an affectionate embrace from one's child, which in turn is distinct from the feeling one has from a property of an object, say, the beauty of a personal possession. The fact that people can use the same emotion term for all three—"pleasure" for example—is presumably coincidental. We take a different view, as we will try to explain.

Summary of our Theory

Our theorising began with this question: Why do social mammals have emotions? The function of emotions had not been central for theorists, but we believed that function must be the starting point of any properly cognitive account. We argued that emotions serve a two-fold communicative purpose (Oatley & Johnson-Laird, 1987).

The first communicative function is within an individual's cognitive architecture. Emotions are a rapid way of preparing for some general course of action. Evaluations of situations in relation to goals fall into a small number of recurring patterns, e.g. of things going well, of losses, of dangers, etc., each of which gives rise to a specific signal. Because these signals are usually derived from evaluations of events in relation to goals they are cognitive in the usual sense of this term, although they need not be conscious. Each signal influences processing modules that it reaches, and if a sufficient number of the processing modules is affected then a qualitatively distinct internal mode of the cognitive system is set up, with its intensity depending on the number of modules affected. The individual is made ready for actions appropriate to the type of evaluation that was made. This system is more flexible than one based on fixed action patterns, because each mode makes ready a small suite of stored outline plans. It is also more rapid than high level processing, because the emotion modes

depend on simple signals not on complex messages that require parsing and inference. Neither the signals nor the modes they set up have any propositional content. Emotion modes may be prolonged, thus resisting alteration by other events. The longer lasting states are called moods. The conscious repercussions of a mode are confined to a distinctive phenomenological tone, corresponding roughly to happiness, sadness, anger, fear, or disgust. Typically, however, an emotional experience combines both a distinctive emotional tone and some conscious propositional content, for instance about what caused the state or to whom it is directed.

The second communicative function of emotions is among members of the same and other species. Gestures, expressions, and actions can communicate emotions, and these also lack propositional content. Thus, the facial structure of a smile or a frown says nothing explicitly about what the person is happy or angry about, or what action may be taken. Such signals can nevertheless prepare a social group for co-ordinated behaviour, in cooperation or competition; and they can structure interactions between potential mates, parents and offspring, rivals for territory, and so on.

We claim that a basic emotion, which corresponds to one of the distinctive modes, may sometimes be experienced without awareness of propositional content of the evaluation that caused the emotion, or of anything else about it. In contrast, complex emotions such as jealousy or embarrassment arise from conscious self-evaluations, and so they are necessarily experienced with some propositional content.

The theory led to three predictions about the emotional lexicon, which we explored in the paper of Johnson-Laird and Oatley (1989). First, if there are five emotion modes, then terms referring to emotions ultimately devolve on one or more of them. Here we differ from most other cognitively based emotion theorists. Ortony and Clore explicitly reject the idea of a small set of basic emotions. They say that if they shared this view, then our analysis would be more compelling to them. Secondly, emotional vocabulary should have a systematic organisation. Certainly it should be more systematic than certain theorists, such as Mandler and Frijda have claimed. We argue that it is structured like other semantic domains. It is not merely a rag bag of terms that are so heterogeneous as to be not worth analysing. Thirdly, words denoting emotions should reflect the structure of emotional experience. Hence, some words should denote basic emotions, corresponding to the modes that can be experienced without awareness of evaluations on which they are based. Other words should denote emotions that include propositional information about a cause or object of the emotion. Still other words should denote complex emotions deriving from evaluations of the self.

Our theory would be wrong if some English emotion words conveyed a phenomenal tone outside the scope of the five unanalysable primitives

corresponding to basic emotion modes. In our paper (Johnson-Laird & Oatley, 1989) we reported an analysis of 590 emotion words—all the English words that we could find that seemed to denote emotions. Its results appeared to corroborate the three predictions.

ORTONY AND CLORE'S FOUR CRITICISMS

1. A Linguistic Criterion for Basic Emotions

Ortony and Clore's most basic criticism concerns the diagnosticity of sentences of the form:

I feel *x* but I don't know why,

where "*x*" is an emotion term. We argue that they bear out our claim that basic emotions depend on non-propositional signals which can be experienced without consciously knowing their cause. It is acceptable in English to say, for example:

I feel angry but I don't know why,

because anger is a basic emotion which can be experienced acausally.

Ortony and Clore agree that sentences of this kind about anger are acceptable, but say it is also acceptable to assert:

I have the feeling of embarrassment but I don't know why (p. 127).

In our view this utterance is odd: Embarrassment arises from a self-evaluation, and such emotions cannot be experienced without some conscious knowledge of their cause or object.

Ortony and Clore also say that it is unclear whether one is to judge the acceptability of such sentences on a logical or a contingent basis. We are grateful for the opportunity to clarify our position: We claim that the issue concerns matters of fact not logic. Hence, when normal individuals feel embarrassed they have some awareness of themselves in a particular social predicament, of being themselves an object of unwelcome attention. So, if you sincerely assert, without any metaphorical intent:

I have the feeling of embarrassment but I know nothing whatever about the cause of this emotion.

then something, somewhere, has gone wrong. Our claim is not that you

have contradicted yourself logically, but that your utterance is analogous to asserting: "I see you even though I am blind".

The difficulty with this kind of discussion is that it depends on assertions winning general agreement from others, so if people continue to disagree as to their linguistic intuitions then the argument is weakened. Ortony and Clore disagree with us and will probably continue to do so. Hence, the question must be settled in some other way. For us the diagnosticity criterion has already played its part in allowing us to construct definitions of emotion terms, and we offer the systematic structure of our lexical conclusions as an alternative to those of Ortony and his colleagues which started from atheoretical beginnings and moved towards conclusions that, for instance, "pleasures" arising from events, actions of agents or the properties of objects are all different.

One solution is to offer sentences to native speakers in the manner of Clore, Ortony, and Foss (1987). We have not done this. What we have done instead is to have 57 subjects keep structured diaries (Oatley, 1989; Oatley & Duncan, submitted) in which they indicated which descriptions of episodes of the emotions of happiness, sadness, anger, and fear experienced in their ordinary lives were correct for each episode. Each subject reported on five episodes of emotions that were sufficiently noticeable to cause physiological perturbation, intrusive thoughts, or an urge to act. Respectively 5, 3, 1, and 9 instances of happiness, sadness, anger, and fear were described in this corpus as seeming "not to be caused by anything in particular". Overall, 6.3% of emotion episodes were described as acausal in this way. For each the subject was saying in effect: "I felt x but I didn't know why". We did not systematically collect data on disgust. We have shown therefore that people do say they feel basic emotions without knowing why, but we can not settle the dispute with Ortony and Clore without showing that emotions such as embarrassment are never described as occurring for no particular reason. Our method, however, shows a way forward, and we plan to collect evidence bearing on the matter.

2. Feelings versus Emotions

For Ortony and Clore a feeling is only part of the emotion. They sketch a position like Frijda's (1986), and say they now hold a similar view: "emotions normally comprise *antecedent conditions* . . . , *appraisals* relevant to one's goals, standards or attitudes . . . , *physiological consequences* . . . , and . . . *dispositional consequences*" (Ortony & Clore, 1989, p. 127, emphasis in original). They say that an emotion is "a private subjective experience reflecting the physiological component and (some or all of) the dispositional consequences" (p. 127). They take us to task for saying that the subjective experience is the emotion.

We are happy once again to clear up a misunderstanding. We do not propose that the subjective feeling *is* the emotion. Like Ortony, Clore, and Collins we believe that an emotion *is* a particular kind of mental state. Where we diverge is that we think first, that this state depends on many processors most of which are not consciously accessible; secondly, that it has the functional property of changing or maintaining readiness; and thirdly, that it has one of five discriminable phenomenal tones. In a typical episode of emotion, a cognitive evaluation—conscious or unconscious—elicits a mental state of an emotion that involves readiness to act in a certain way, and perhaps somatic disturbances. We say it would be confusing to think that an emotion as such could be an eliciting condition, a disturbance of the autonomic nervous system, or a dispositional consequence, or a whole sequence including these elements. So this is indeed a point of difference between our theory and those of Frijda (1986) and Ortony and his colleagues, in which an emotion is a whole prototypical sequence from antecedent conditions to dispositions and actions, and where mentioning just part of the sequence can be a somewhat untypical reference to the whole emotion. We discuss the problems of regarding emotions as prototypes in our original article.

What is principally at issue in our paper is the meaning of everyday emotion words. Our analyses indicate that the folk theory embodied in English implies that there are emotion terms which normally refer not to a whole sequence or more peripherally to any of its parts, but just to mental states corresponding to the emotion modes we have described. It is thus compatible with our natural scientific theory of basic emotions. Emotion terms of this kind do not denote eliciting conditions or expressive consequences. In English, eliciting causes and consequences of an emotion are referred to either by distinctive terms that combine the emotion with some propositional content, or in sentences that mention antecedents or consequences of emotion separately. Thus, English allows such utterances as:

I am sad because the person I love has left me, and that is why I have been unable to work and keep bursting into tears.

The term “sad” refers to the emotion as a mental state or phenomenal experience, not to its eliciting conditions, physiological accompaniments, or behavioural consequences which are all described in separate clauses. In short, English embodies a view that “the *subjective experience* of emotion is central” (Ortony et al., 1988, p. 182, *emphasis in original*).

Ortony and Clore (1989, p. 128) raise the distinction between feelings and emotions because they believe that the test sentence “feeling x without knowing why” may be judged acceptable because it contains the verb “feeling” rather than “being”. For them “feeling x” refers only to part of

the emotion, to the subjective part, neglecting its causation. They say that “being x” refers to the whole emotion which cannot be dissociated from its causation. That is why an utterance of the kind:

I feel angry but I don't know why

seems acceptable, whereas for them the corresponding assertion:

I am angry but I don't know why

seems much odder.

Ortony and Clore consider that a feeling and an emotion can be distinguished because one can speak of a feeling of anger, a feeling of fear, but not a feeling of headache. In our view pain has a comparable semantics to emotions. If it is odd to speak of a feeling of headache it certainly is not odd to speak of a feeling of pain. “Pain” refers to a primitive unanalysable mode. As with emotions, dissociations are possible. Pain can occur with no tissue damage, and serious tissue damage can occur without pain. As with an emotion, a pain is not just the feeling, it is a mental state with a distinctive phenomenological tone—although pain, in contrast to emotion, is typically referred to a specific bodily location, hence the possibility of “headache”.

Once again, of course, Ortony, Clore, and ourselves are offering linguistic examples and hoping that readers will find them intuitively acceptable. We know not all readers may agree, and worse that our sense of what is acceptable may have been affected by the theory we have proposed.

The way of proceeding, we think, is two-fold. First, that as linguistic theorists we create intuitive tests and examine their results systematically on a corpus of terms. The linguistic test of “feeling x” versus “being x”, has, for instance, been employed to very useful effect by Ortony and his colleagues to distinguish terms that properly refer to emotions from those that do not. As they argue convincingly, phrases such as “being abandoned” do not necessarily imply an emotional state, and they are thereby able to criticise lists of emotion terms that are too inclusive but which have been used in influential pieces of research.

Next, as well as telling others about systematic effects of employing intuitive tests, we have to employ other methods that will convince even the sceptical. In the matter of whether feelings are the whole or a part of emotions we have no data from independent judges. What we hope, however, is to have shown how our approach and the overall Gestalt of conclusions differ from those of Ortony and his colleagues. Our methods have generated the analyses offered in our paper, which we argue have a systematic quality beyond any individual linguistic intuition.

Moreover, in the end we cannot legislate against the following kind of usage:

To be angry is to be red in the face and go around hitting people.
To be frightened is to have butterflies in one's stomach.

Nevertheless, our prediction is that such remarks would be rated by judges as less typical than those in which emotion words were used to refer to mental states.

3. Emotions versus Moods

We argued that one can assert:

I am angry but I don't know why,

but cannot say:

I feel pity but I don't know why,

because pity is a complex emotion, i.e. one that depends of a conscious evaluation. Ortony and Clore suggest an alternative explanation, that hinges on the difference between an emotion and a mood. One may tacitly give "angry" a mood reading, whereas it is harder to think of a mood of pity. Even if speakers have in mind angry moods rather than sudden emotions when they make the first of these remarks, we are bound to ask: Why can there not be moods of pity?

Ortony and Clore say: "There is no reason in principle why one could not be in . . . a mood of pity" (p. 131). For us, moods occur when an emotional mode is maintained beyond its initiation, and without any necessary awareness of its eliciting conditions. They depend on these modes being self-sustaining. Moods may not have a single cause, and they can be influenced not just by evaluations in relation to goals but by bodily states, by drugs, by hormonal changes, or even by electrical stimulation.

The terms that can be used to refer to moods should therefore be all those that denote basic emotions, because basic emotions depend on emotional modes which can be initiated without knowing why and which can be maintained. This prediction was corroborated in our semantic analyses. Because pity implies an awareness of the eliciting cognitive evaluation, or at least the object of the emotion, it is an unlikely candidate for a mood. If, like Ortony and Clore, one denies the special status of a few basic emotions and their underlying modes, than the real puzzle is why moods exist at all. Indeed, Ortony (pers. comm.) has said that one of the

strengths of our theory is that, unlike other cognitive theories, it is able to give a principled account of moods.

Ortony and Clore write: "The more one constrains terms to refer specifically to brief but full-blown emotional reactions, the less clear is it that the experience can occur without awareness of the cause or the object of the reaction" (p. 136). We accept this generally: Brief and intense acausal emotions are rare except in psychopathological states, although we maintain that our arguments about the existence of acausal emotions are not damaged by this fact.

But a problem arises for us: Ortony and Clore ask why, if moods can correspond to any of our basic emotions, does the notion of a mood of disgust seem improbable? Our treatment of disgust is the most problematic in our analyses because it is so closely tied to gustatory experiences. Perhaps we were mistaken to assume that hatred and its cognates are based on disgust. Perhaps also we were mistaken not to introduce a sixth basic emotion, desire, as the mode underlying those terms that designate emotional goals, which are otherwise an isolated lexical category in our semantic analysis. One advantage of this sixth mode would be that the basic emotions would then form a set of antagonistic pairs: happiness-sadness, anger-fear, desire-disgust. A disadvantage is that desire is normally experienced in relation to an object, thereby implying propositional content. The same is true in many cases of disgust. Yet a sustained mood of free-floating disgust is not impossible. The hero of Sartre's autobiographical novel, *La Nausée*, suffered from prolonged bouts of existential nausea. The contingent nature of existence—the inability to affect whether one might suffer this or that piece of fortune—gave rise to intense moods of nausea, rejecting not any thing in particular, but the absurdity of such a world. Perhaps a sustained mood of generalised desire would also be possible.

4. Basic Emotions as Semantic Primitives

We now turn to the pivotal notion that distinguishes our theory from those of Mandler, Frijda, and Ortony and Clore—the issue of basic emotions. We have argued that there is a small set of emotion modes, and that ultimately the meaning of any emotion term is based on one or more of them. In their book, Ortony et al. (1988) defend a more complicated position. They accept the idea of different types of emotion. They "claim that some emotions are more basic than others" (p. 28); but they reject the idea that there is a set of basic emotions. Their starting point is the idea of emotions as valenced states, i.e. positive or negative reactions to the consequences of events, the actions of agents, or the properties of objects. Like Frijda they are drawn to the idea of emotions as either positive or

negative. In contrast Mandler proposes just a single emotion mode, of arousal.

In daily life almost everybody would agree that there are positive and negative emotions—some emotions feel good, others feel bad. The question is whether this informal classification reflects an important underlying component of emotions. Theorists could argue that sadness, anger, fear, and disgust are negative because they are usually unpleasant, and people avoid them. Such formulations, however, appear to be false: People read books and go to theatres in order to experience sadness, fear, and pity; and they may welcome anger in such activities as competitive sports. Our theory is that each emotion mode is accompanied by a different internal state, which may involve distinctive physiological accompaniments (see e.g. Ekman, Levenson, & Friesen, 1983). These states are not intrinsically “positive” or “negative”.

If each emotion has either positive or negative valency then there must be a component in common to all emotions of the same valency. Yet, if one examines so called negative emotions, such as sadness, anger, fear, and disgust, it is difficult to discern anything common to their cognitive antecedents, phenomenology, or physiological and behavioural concomitants, other than that people tend to label them as negative, unpleasant, bad. People also use this label about bodily sensations which are painful, and in judgements of disapproval. Hence, we think Ortony and Clore owe us some further elucidation of emotions as valenced reactions. The notion appears to embrace too much else besides emotions.

The use of negative valency in any semantic analysis of emotion words seems to be redundant—an idle wheel in the theory. Ortony and Clore give, for example, the following analysis:

sadness = the negative feeling occasioned by the (conscious or unconscious) belief that things important to me are not going well and that it is difficult to rectify what is wrong (p. 132).

Note, first, that the word “negative” is redundant and, secondly, that the word “feeling” implies agreement with our claim for the primacy of subjective experience. Moreover, a person presented with this definition and asked to say to what emotion it applied, might easily say that it was frustration, or anger.

We have argued that in everyday usage the proper semantic analysis of the phrase “a negative emotion” is the disjunction “sadness, anger, fear, or disgust”. In contrast, Ortony and Clore claim that each member of this list should be defined as a negative feeling plus some additional components. How can we decide between these views? One relevant piece of evidence is the existence of other emotional terms that we claim have disjunctive analyses, e.g.

browned off: angry or depressed for a known reason
 careworn: fearful or sad
 chagrin: sadness or anger for a known reason
 concern for: anxiety or sympathy for someone else
 distraught: intense grief or anxiety for a known reason
 distress: sadness or fear for a known reason
 impassioned: feeling or expressing intense excitement, anger, or hatred
 inflame: to cause intense anger, desire, or hatred
 offend: to anger or disgust
 oppress: to depress or worry
 pain (emotional): sadness or fear for a known reason
 pissed off: to feel angry or sad for a known reason
 qualm: brief feeling of anxiety or disgust
 shook-up: anger or fear for a known reason
 soothe: to make less angry or anxious
 touch: to cause someone to feel happiness or sadness
 trouble: to cause anxiety or annoyance

Such examples have straightforward analyses in terms of our basic emotions. They become problematic if everything ultimately devolves on only positive or negative valencies. For instance, why should only some negatively valenced emotions be embraced by the terms in this list?

Ortony and Clore suggest that if, as we suppose, “negative emotion” has a disjunctive analysis, then the argument could be pushed further. They say a basic emotion term such as “fear” could be defined disjunctively too, as “apprehension or anxiety or dread or fright or . . .” (p. 133). Perhaps one could construct such a definition. The reason for preferring an analysis of, say, “dread” as “an intense fear of someone or something” is that it is genuinely informative. In our analysis of emotion words, we were able to construe each word using one or more of the basic emotion terms, or else using words that in turn could be construed in this way. For the terms, “angry”, “sad”, “fear”, and “disgust”, we could say only that they were basic emotions. They are primitive in the sense that we could not break them down meaningfully into smaller particles. Without having experienced them, a person would not know what they meant.

A definition of these first as “negative emotions” would require a further way of distinguishing between these and happiness. The only way to construe “negative emotions” in everyday terms is to appeal to their eliciting cognitive evaluations or effects on action (as in Ortony and Clore’s definition of sadness). But ordinary usage shows that one can use a basic term in assertions that preclude any such necessary semantic components, e.g.

I am sad even though I do not believe (either consciously or unconsciously) that things important to me are not going well or that it is difficult to rectify what is wrong.

Speakers might say that they just woke up feeling this way, or that they had been watching a sad movie. The assertion could therefore be true. Hence, one can refer to the emotion without referring to eliciting conditions. If we are right, the analysis of any basic emotion term excludes any necessary reference to the evaluation eliciting the emotion.

We sense that Ortony and Clore have changed their position between writing their book, and writing their commentary on our article. In their book (Ortony et al. 1988, p. 173) they say:

... consider words like 'perturbed' and 'upset'. Certainly, the state of being upset seems to be an emotion, but a moment's thought reveals that it is a very general negative state that can be consistent with being distressed, angry or even ashamed. Thus, the word 'upset', from our perspective, is capable of being used to refer to several different emotion types.

Apart from our reservations about the idea of negative states, we agree—but this makes us wonder what caused Ortony and Clore to change their minds. Or perhaps they agree with us more closely than they imply.

CONCLUSION

Ortony and Clore point out (p. 134) that we analyse only English words. We accept this as a shortcoming, and accept also that emotion lexicons in other languages might be different. We would welcome semantic analyses of other lexicons both for themselves, and as the ideal tests of our proposals about semantics. We recognise that there are cultures in which emotions seem to be of less interest than in our individualistic and somewhat egocentric culture. But if emotions are of interest in a culture then our prediction is that the language should make it possible to refer to them as distinct from bodily states like pain, and that there should be terms that refer to combinations of an emotion and some propositional content that conveys the cause or object of the emotion. This is not the place to explore cross-cultural issues. To give just one indication, however: Lutz (e.g. 1988) has analysed emotion terms on the Micronesian atoll of Ifaluk whose culture is geographically and conceptually remote from the Anglo-Saxon world. She found terms which people said were "about our insides". Her subjects sorted them into groups that corresponded to eliciting condi-

tions not dissimilar from those that we claim elicit distinctive emotion modes at recognisable junctures, e.g. losses of important goals, dangers, etc. Her analyses also imply that as well as being "about our insides", these terms often involve propositional content concerning causation or the object of the emotion.

We believe that the principal difference between our conclusions and those of Ortony and Clore, and the other representative cognitive theorists we have discussed, concerns the existence of basic emotions. Our proposals would indeed be more compelling if analyses of non-Indo-European languages were shown to lead to similar conclusions. The issue of basic emotions, we believe, will be resolved not in the end by argument but by empirical work perhaps primarily of a cross-cultural kind, but also in developmental, comparative, and physiological psychology.

Ortony and Clore conclude their remarks with the radical proposal that words may not have meanings at all: "When we look at dictionary entries for emotion words", they say, "we discover not what the words *mean*, but what kind of states they refer to" (p. 135, emphasis in original). This extensional semantics works for a finite domain: One simply lists each entity in the domain to which a word refers. The system breaks down if, for any reason, such a list is impossible, e.g. if not all potential referents yet exist. Although the number of basic emotions is small and finite, the domain of emotion terms is infinite in this sense because one cannot list all emotions if these are to include propositional information. Hence the mental dictionary of emotion words must enable speakers to use each word to refer in an appropriate way. Such specifications represent the meanings of words. In the case of basic emotions, the only way a person can grasp the meaning is to have experienced the emotion and to know that the word refers to such a state.

In this reply, we have tried to assuage Ortony and Clore's four main worries about our theory, perhaps even to persuade them, and to point out differences between our theory and other cognitive theories of emotions. No one is yet in a position to decide which if any current cognitive formulation is to be preferred. The issue will be decided on the basis of a growing body of evidence and sharper definition of theories, to which we hope this short paper will contribute. In this spirit we are struck by the fact that despite largely independent provenance, and differences in some respects, all current cognitive theories of emotion have strong similarities.

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