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Against Basic Emotions, and Toward a Comprehensive Theory

Marc A. Cohen

Washington, DC

According to recent literature in philosophy and psychology, there is a set of basic emotions that were preserved over the course of evolution because they serve (or served) adaptive functions. However, the empirical evidence fails to support the claim that there are basic emotions because it fails to show that emotions can be identified with specific functions. Moreover, work on basic emotions lacks the conceptual space to take emotional experience into account and so fails to amount to an adequate theory of emotion: in the literature basic emotions are identified with (so-called) emotional responses, but these responses — even if they did exist as characterized — are not emotions or emotional. That said, recent empirical discoveries about the brain structures responsible for emotional responses, discoveries that are often cited in the basic emotions literature, nevertheless form the foundation for a comprehensive theory of emotion — a theory that is broadly Jamesian in that an emotion is the experience and interpretation of a prior, physiological response.

Much of the recent philosophical and psychological literature on emotion concerns the (supposedly) basic emotions. These are identified with pre-consciously produced responses to the surrounding environment, each of which served some adaptive function and so was preserved over the course of human evolution. For example, on this view fear is an animal's physiological and behavioral response to a dangerous situation. Taking Paul Ekman's work to represent the basic emotions project, in this paper I explore and reject three empirical arguments for the existence of basic emotions. And I offer a separate, conceptual argument against there being basic emotions at all.

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The conceptual argument is directed against the identification of emotions with responses, and it shows that aspects of emotion other than responses are fundamental, in the sense that these other aspects offer the basis for identifying an emotion and distinguishing it from others. For this reason, the argument depends on making a distinction between emotions and the responses associated with them, even though this distinction would be incoherent to the basic emotions theorist, for whom the terms "basic emotions," "basic emotional response," and "basic response" mean the same thing and are used interchangeably.

Despite this line of criticism, the evidence described below in the following section, along with the more detailed evidence presented in subsequent two sections, provide something of an empirical basis for accepting the claim that there are basic emotional responses. To be sure, the empirical evidence is incomplete, but underlying theoretical work on basic emotions is a deeper, more general, and more methodological commitment to the pattern of explanation found in recent work in evolutionary psychology.

I will argue, however, that the empirical evidence does not support the basic emotions project as articulated by Ekman and others. Even so, the basic emotions project is interesting as a theory of emotion because of its explanatory potential: the characteristics of basic emotions outlined below could explain why some emotional responses are found in humans, primates, and more primitive animals (the basic emotions were preserved over the course of evolution because of their adaptive value), and they could explain why some emotional responses are pan-cultural (they are part of our phylogenetic make-up). Moreover, the evidence gained about responses over the last fifteen years of research is nevertheless a central aspect of, and starting point for, a systematic account of emotion. Although the primary focus of this paper is critical, I outline an alternative to the basic emotions approach; this alternative accommodates recent empirical discoveries about the neural processes underlying responses, and also a commitment to evolutionary explanation, but at the same time it avoids the problematic step of identifying emotions with responses.

The Basic Emotions Project

Ekman's (1992a) argument for basic emotions is meant to capture three inter-related, though conceptually independent, characteristics: (1) each basic emotion serves (or served) some function; (2) these functions are (or at least were) adaptive responses to specific inter-personal problems, and for this reason the neural structures responsible for producing the adaptive response were preserved over the course of our evolutionary history; and (3)

basic emotions are biologically primitive, meaning that they are hardwired or biologically given.[1]

Ekman is especially concerned with the first two of these characteristics. Regarding the first, basic emotions are distinguished from one another on the basis of their serving different functions, which are marked (and indicated) by differences in their particular responses and expressions. In some cases, these different expressions also function to provide information to others about the environment and the future behavior of the organism. It is important for what follows to emphasize this: Ekman claims that each basic emotion serves a particular and distinct function, not that the basic emotions as a group provide some benefit to humans or animals. Also, Ekman's limitation of the basic emotions to responses that serve interpersonal problems prevents the characterization from being too general and including other responses such as the physiological response to exposure to cold (see below).

Concerning the second characteristic — that of serving an adaptive evolutionary purpose — Ekman claims that "the emotions evolved for their adaptive value in dealing with fundamental life tasks" (1992a, p. 171). He lists a variety of ways to characterize these life tasks, but the central point is this: "the primary function of emotion is to mobilize the organism to deal quickly with important inter-personal encounters [between people or between people and animals], prepared to do so in part, at least, by what types of activity have been adaptive in the past" (1992a, p. 171).

Ekman also accepts the third of these characteristics, according to which basic emotions are produced by a specific set of sub-cortical neurophysiological structures that we share with our evolutionary ancestors. These structures

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[1]Ekman consolidates and restates his account of basic emotions in Ekman (1999); there are no substantive differences between that work and the earlier papers — at least on matters relevant to this essay.

The three general characteristics outlined in the main text are my formulation, and they capture eight of the nine more specific ones Ekman (1992a) offers. Using the numbers Ekman assigns to each characteristic in that paper, the presence of (4) distinctive and universal antecedent events suggests that an emotion can be identified with a distinct, particular function, meaning that that emotion is a response to the problem that the antecedent events mark. The presence of (1) distinctive expression (universal signal), (3) distinctive physiology, and (5) a systematic relationship between the two also suggest that a basic emotion is associated with a given function (because together the expression and physiology form a coherent response to a problem posed by the environment). The presence of (2) comparable expressions in other primates suggests that an emotion-response is one that has been adaptive over our evolutionary history. And (6) quick onset, (8) automatic appraisal, and (9) unbidden occurrence suggest that there is a neural process at work that is tailored to the function of the emotion, one that operates pre-consciously and does not involve higher cognitive activity or conscious processes. Ekman includes the final characteristic, (7) brief duration, to distinguish emotions from other affective phenomena (like moods) and because, according to Ekman, it would be adaptive for responses to be over quickly so the organism can respond to changing situations.

were selected for by evolution because of the adaptive value of the function they performed; they are hardwired; and they are still present in humans even if the responses they produce are no longer adaptive.[2] This third characteristic is clearly consistent with the other two and could serve as evidence for them: if there are such structures it would suggest that they serve (or served) some adaptive function, because otherwise the structures would not have been preserved.

Despite this focus on particular brain structures, it could be the case that neural structures producing our emotion-responses are not discrete, meaning that the structures are not clearly identifiable anatomically or that they are not part of physical modules dedicated to only one function. This possibility is not acknowledged in the literature on basic emotions, but this characterization of an emotion as basic could be restated in terms of there being an emotion-specific neural program, as opposed to a set of specific neural structures, without having to give up the commitment to evolutionary explanation. Such a program would consist of (1) a set of preprogrammed responses (like the disgust response which seems to be present from birth) and/or a specific, biased learning mechanism, (2) a set of outputs that are complex, coordinated (come as a unit), and invariant, and (3) rapid and involuntary coordination between the appraisal and the production of the response, coordination which would occur without conscious direction (see Griffiths, 1997, p. 16). The fundamental point, that basic emotions have a long evolutionary history and analogs are found even in lower mammals, is preserved. And with this shift from talk of neural structures to neural programs, it becomes a separate question as to whether there are actual, discrete neural structures or modules which can be identified as carrying out this kind of program.

The basic emotions approach is somewhat counterintuitive in that psychological experience is not central to the account of emotion: the focus on behavioral and physiological responses as the explanadum leaves conscious experience out as inessential and merely epiphenomenal. This approach is common in the literature, though the reasoning underlying it varies. Ledoux (1996) claims that we can give a complete account of basic emotional responses in terms of pre-conscious neural processes, an account that can thoroughly explain the function, purpose, causal history and causal efficacy of an emotion — that is, everything about how an emotion interacts with

[2]Ortony and Turner emphasize this third characteristic of basic emotions in their critique, using the term "hardwired" to mean "biologically pre-determined" in this context (see Ortony and Turner, 1990, pp. 321, 324; their critique is discussed in footnotes five and six below). Note: the characterization of basic emotions as hardwired does not imply that the relevant neural structures can respond to only a fixed, predetermined set of stimuli; learning is still possible here — a fact often overlooked by critics who approach emotions from a social or cultural perspective.

the world — without attention to conscious experience, and so he sets experience aside. This approach — this assumption that an account of emotional responses amounts to an account of emotion, or at least the interesting aspects of emotion — is reinforced by more methodological concerns articulated by Ekman. He, too, excludes emotional feelings from his work, claiming that too little is known about the feelings: "The subjective experience of emotion, how each emotion feels, is for some at the center of what an emotion is . . . . [T]his is excluded because too little is known about how subjectivity maps on to other aspects of emotional experience" (1992a, p. 175).[3]

But even though the basic emotions project dismisses conscious experience as (at most) epiphenomenal, this step is not a necessary part of the account. Instead, advocates of basic emotions could follow William James and adopt a two-stage model in order to incorporate emotional experience. James (1884, 1890/1981) challenged the common sense view on emotion, according to which the experience of fear, to use his example, generates a physiological response, like an increased heart rate. He argued that the perception of some relevant stimuli directly produces a response, and the subsequent conscious experience of this response is the emotion. With James, if basic emotional responses are generated by pre-conscious appraisal processes, the experience of, say, fear could be the product of a second process, one that creates conscious experience, the feeling of being afraid.

Separate from this point about the place of conscious experience, the empirical evidence offers some support for the account of responses offered in the basic emotions literature. There is now a general consensus on the neural structures involved in generating the fear response (see LeDoux, 1996, p. 150). In rats conditioned to fear tones, the auditory thalamus directly triggers the action of the amygdala, which produces physiological and behavioral responses (like increased heart rate and freezing, respectively). There is also evidence that the same structures are at work in other animals, including humans. And, although it is unclear what, exactly, constitutes that response in humans, because of the similarity in brain structures across species, philosophers, psychologists and neuroscientists who work on basic emotions assume that there is some discrete state that can be labeled the human fear response.

On the basis of these findings about the relevant neural structures in rats, the fact that these neural structures are preserved across species including humans, and the location of these structures in the pre-cortex, LeDoux

[3]This approach is, to be sure, not a new problem, but it is worth emphasizing here because some psychologists and philosophers have noted a lingering strand of behaviorist thinking in contemporary cognitive psychology and philosophy. On this point see Epstein and Hatfield (1994, especially p. 170).

(1996) argues the following: the physiological response to fear in rats and humans is produced by pre-conscious, reflex-like psychological processes that detect, evaluate and respond to stimuli. This organization of brain function in humans is an "evolutionary relic" (p. 163) — fish, amphibians and reptiles have poorly developed cortical regions (compared to mammals), and the direct neural pathway in humans from the thalamus (which receives sensory input) to the amygdala (which triggers physiological changes) is a remnant of the way those less developed brains were organized. LeDoux suggests that this neural organization serves a useful function, despite the fact that it cannot make fine distinctions among stimuli, because it is faster than a system that depended on the cortex would be. In his words, "It is a quick and dirty system" — though this claim seems to be intuitive rather than based on quantitative data.[4]

Fear, according to this understanding, fits the third characteristic of basic emotions described above — namely, that it is hardwired — which suggests that it also has the other two characteristics. For this reason, fear is taken to be the prototype of the basic emotions. And LeDoux and others generalize, suggesting that the other basic emotions will fit this pattern: they are produced by more primitive parts of the brain, and are therefore informationally encapsulated, reflex-like, and relatively insensitive to culture (this list of characteristics is taken from Paul Griffiths, 1997, p. 16). Though incomplete, the empirical evidence therefore supports the account of basic emotional responses as generated prior to and outside of conscious experience, and, as James suggests, these responses could become the *object* (or an object) of our conscious emotional experience.

One final note before proceeding: there is dispute in the basic emotions literature over which emotions are basic, and Ortony and Turner (1990) argue that this disagreement betrays a deeper disagreement over what it means for an emotion to be basic.[5] In response, Ekman (1992b) accuses Ortony and Turner of overemphasizing the level of disagreement between theorists over which emotions are basic, and LeDoux (1996, p. 121) criticizes

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[4]See again LeDoux (1996, p. 163); he does not provide data showing that the time saved by avoiding cortical processing is substantial enough to have adaptive benefits.

[5]Ortony and Turner (1990) present a list of views according to which anywhere from 2 to 11 emotions are basic, and they use this observation as the basis for their negative argument. Despite Ekman's response, noted in the main text, it is worth noting that *Psychological Review* (1992) published three critical replies to Ortony and Turner's original article; in them, Ekman (1992b), Izard (1992) and Panksepp (1992) each defend different lists of basic emotions. Ortony and Turner (1992) take this disagreement to underscore their original claim, that there is no single, consistent account of what it means for an emotion to be basic. Nevetheless, this disagreement is not an argument against there being basic emotions; it may only show that some theorists are wrong about them.

Ortony and Turner for being overly concerned with fringe cases and terminological disputes. In order to minimize the apparent disagreement, Ekman (1992a, pp. 172–174) sets aside the fringe cases and takes as basic "emotion families" or broad categories of emotions: for example, joy, considered by some to be basic, is in the same family as happiness, and so the presence of joy in one list of basic emotions and happiness in another is merely a terminological difference as opposed to a substantive one. My focus in this paper is on the theoretical account of basic emotions, and so I set aside this dispute: despite the differences noted by Ortony and Turner, accounts of basic emotions are all committed to the three characteristics outlined here and to the identification of emotions with responses.

On the Evidence for Basic Emotions

Although LeDoux's work on brain structures is suggestive, Ekman's work on autonomic responses (especially Ekman, Levenson, and Friesen, 1983) and his work on facial expressions (e.g., Ekman, Friesen, and Ellsworth, 1982) are most often cited as evidence for the existence of basic emotions. However, neither line of evidence shows that there are basic emotions as characterized above. This is the subject of the three sections that follow.

(A) Against the first line of evidence, experimental study of autonomic responses provides little basis, if any, for identifying emotions with particular patterns of arousal, so this evidence offers little reason to support the contention that there is a set of basic emotional responses. Moreover, if basic emotions cannot be associated with particular response-patterns, that would raise the deeper question about whether the emotions in question do actually serve some adaptive function. (This argument does not rely on a categorization of emotions as experienced: the argument is not that there are instances in which a person experiences fear that are not accompanied by the supposed fear response; instead, the argument is that even if responses are classified on the basis of kinds of stimuli, there is no single fear response, and so no basis for identifying fear with a particular pattern of physiological changes.)

(B) In addition, the evidence that facial expressions are pan-cultural for some emotions is quite strong, but this evidence does not show that these emotions are basic — that is, this evidence offers no reason to think that there is a set of emotions with the three characteristics outlined above.

Taken together, these two arguments press the more fundamental question of what functions the supposedly basic emotions serve, and (C) the responses to this question for one supposed basic emotion, sadness, are inadequate. If this is correct, the explanation basic emotion theorists offer for emotions is closed off at the beginning, which raises the question of whether the argument could be extended to emotions other than sadness.

Separate from these empirical arguments against there being basic responses, the basic emotions approach is flawed because basic responses, if they did exist, would not be emotions. The conceptual argument advanced for this claim makes it possible to outline the alternative to the basic emotions approach mentioned above.

On the Physiological Evidence

The identification of a particular response for each basic emotion would be strong evidence for the basic emotions position, because it would suggest that each emotion served a function for which the response pattern is or was adaptive, and it could help us understand the particular function served by each basic emotion in some detail.[6]

Responses have both behavioral and physiological components, but research has focused on one subset, the physiological responses produced by the autonomic nervous system (ANS), which controls heart rate, muscle activity in the viscera, the secretion of hormones, and many other functions. The research has this focus for three reasons: emotional responses clearly involve autonomic changes, emotional experiences seem to involve visceral feelings and, most importantly, because autonomic responses are produced involuntarily and therefore fit the model of basic emotions as being reflex-like and shared with our evolutionary ancestors (this list of reasons is taken from Cacioppo, Berntson, Larson, Poehlmann, and Ito, 2000, p. 179).

The most often cited evidence for differentiated autonomic responses is research conducted by Ekman and collaborators, in particular a study in

[6]As noted, Ortony and Turner (1990) focus on the third characteristic described in the main text, that basic emotions are hardwired. They argue, even if a differentiated set of physiological responses could be associated with an emotion, it would not show decisively that that emotion is hardwired, and so it would not show that the emotion in question is basic: a distinctive response pattern could be produced by an appraisal process that is not hardwired but itself triggers hardwired responses. If this is the case, responses are sets of dissociable components, and so the dispute is actually about whether responses or response-components comprise the elementary units of explanation. Ortony and Turner's position, that the response-components are the basic units, is motivated by their prior commitment to emotion-appraisals being cognitive in a richer sense than allowed in accounts of basic emotions. This line of thought is developed in Ortony and Turner (1990), and the point about some aspects of a response being inessential is emphasized in Ortony and Turner (1992). Ekman could respond to Ortony and Turner by suggesting that the association of hardwired responses triggered by an appraisal could itself be hardwired, so the criticism lacks force unless Ortony and Turner can defend their assumption, that the appraisals at work in triggering emotional responses are not basic, meaning, in this case, hardwired. On this topic see also LeDoux (1996, pp. 119–121). See Griffiths (1997, pp. 100–106) for a discussion of a related sense of basic emotions in the combinatorial sense of basic.

which Ekman suggested that some emotions can be associated with specific autonomic patterns (Ekman, Levenson, and Friesen, 1983). In the study Ekman measured autonomic responses for six emotions — surprise, disgust, anger, fear, sadness and happiness — using two tasks as elicitors: subjects were asked to recall and re-experience past emotions of each type (the re-lived emotion or imagery task), and they were instructed on how to make facial expressions associated with each emotion (the facial expression task).[7] The study measured five indicators of autonomic changes: heart rate, left and right finger temperature, skin conductance and forearm flexor muscle tension.

At best, Ekman's study is more suggestive than it is conclusive because the differentiation he observed was incomplete. Using the facial expression task, Ekman was able to distinguish happiness, disgust and surprise as a group from anger, sadness and fear on the basis of heart rate: the second group was characterized by larger increases. Within that second group anger could be distinguished from sadness and fear by changes in skin temperature. This provides three groupings, and for further discrimination Ekman appealed to the re-lived emotion task in which he was able to distinguish sadness from fear by skin resistance. As a whole, then, Ekman claimed to have provided a complete differentiation of anger, sadness and fear, though one that still leaves happiness, disgust and surprise undifferentiated.

A recent meta-analysis of research on the differentiation of autonomic responses confirms part of Ekman's finding: Cacioppo et al. (2000) analyzed 22 papers on the possibility of differentiating between the emotions on the basis of autonomic response; they concluded that anger, sadness and fear as a group could be differentiated from disgust by larger changes in heart activity.[8] But Ekman's finding that anger could be distinguished from sadness and fear on the basis of changes in skin temperature was not observed in his re-lived emotion task, and it was not supported by the meta-analysis (in their earlier study Cacioppo et al. identify three studies showing no such difference between anger and sadness and also five studies showing no difference between anger and fear). In addition, Ekman's finding that sadness and fear could be distinguished on the basis of skin resistance was not observed in his

[7]The mechanism for how this latter task produces autonomic activity is not understood. Subjects are instructed to make the appropriate facial expression on a muscle-by-muscle basis — that is, without any discussion of the target emotion. In another essay Ekman (1992c) offers a set of hypotheses to explain why making the facial expression associated with a certain emotion would trigger other autonomic changes associated with that emotion. It seems clear that this is of theoretical importance, as Ekman notes, but the issue is not material here.

[8]Cacioppo et al. (1993) reached the same conclusions on the basis of a more limited meta-analysis of 13 papers.

facial expression task, and Cacioppo et al. note that the finding is not significant when data from both tasks is combined (Cacioppo et al., 2000, p. 183).

In short, the results of the meta-analysis challenge Ekman's claim to have offered anything more than a gross differentiation of anger, sadness and fear on one hand and happiness, disgust and surprise on the other. It could be argued that Ekman fails to show even this gross distinction because he failed to find it using the re-lived emotion task. Leaving this stronger criticism aside, the meta-analysis could be dismissed as a lack of a finding rather than a negative or contradictory finding. But on this point the negative results within Ekman's own study are especially damning: the fact that his results differed across the two tasks despite his using the same subjects, procedures and controls makes it more difficult to dismiss the discrepancy across the two tasks as a lack of a finding (Zajonc and McIntosh [1992] also make this observation, and they note additional inconsistencies across Ekman's later studies).

More important, though, is that Ekman's re-lived emotion task provides a positive finding of a different sort, namely that discrete emotions can occur in the absence of autonomic differentiation. This finding is well supported in the literature on differentiated responses — indeed this seems to be the central finding of Cacioppo and his collaborators' meta-analysis. Ekman's own study makes an especially strong case for this finding because he had subjects rate the intensity of their emotional experiences during the re-lived emotion task. He did so in order to limit his investigation of autonomic responses to the cases in which subjects succeeded in re-living emotions, but in doing so he showed that his subjects had strong emotional experiences without differentiable autonomic responses. This finding suggests that a differentiated autonomic response is not intrinsic to or a necessary part of an emotion. And so this finding raises a challenge to the core assumption guiding the basic emotions project, namely that emotions just are emotional responses.

Richard Davidson (1993) offers a compelling explanation for the finding that autonomic responses are not differentiated, an explanation that raises fundamental questions about another assumption underlying the basic emotions project, that a discrete set of structures produces each emotional response (e.g., one for sadness, one for anger). Quoting Ekman, Davidson endorses the assumption that the autonomic responses associated with different emotions "produce patterns of activity that will support the behavioral adaptations and associated motor programs that are most likely for that emotion" (Davidson takes this passage from Levenson, Ekman, and Friesen, 1990, p. 379). But Davidson then notes that many emotions seem to involve different kinds of action tendencies; for example, both fear and anger can involve either approach or withdrawal (or freezing in instances of fear) depending on the situation, and these are generated in different parts of the brain.

Moreover, because these action tendencies differ, we should expect the autonomic responses to differ accordingly.[9] As evidence for this point Davidson refers to a study in which different patterns of defensive behavior in rhesus monkeys were shown to be affected by different neurotransmitter manipulations, suggesting that they are mediated by different neurotransmitter systems. In the study three different patterns of defensive behavior were elicited from rhesus monkey infants using different stimuli: sounding distress calls, aggressive barking, and freezing and becoming silent. One neurotransmitter was shown to affect only the first, another the other two (see Kalin and Shelton, 1989, pp. 1718–1721). [This evidence supports the note above, that the argument being advanced in this section does not rely on a categorization of emotions as experienced: where the analysis of Ekman's work showed that an emotion can be experienced without the (supposedly) appropriate physiological response, Davidson's work shows that the same point can be made with emotions categorized by stimuli.]

Davidson offers this criticism of the basic emotions approach in order to clear the ground for his own positive account, which emphasizes the importance of approach and withdrawal behavior in understanding emotion. A more complete discussion of Davidson's work and the evidence supporting it is outside the scope of this paper, but as described, it should be clear that abandoning the basic emotions approach does not amount to abandoning the possibility of an evolutionary account of emotions. This is a crucial point. Note, though, that Davidson's evolutionary account involves a transformation in thinking about what an emotion is. If different instances of a single emotion could involve both approach and withdrawal behavior — and this seems plausible given the evidence described above — then the physiological response produced in the two instances would differ accordingly. And if Davidson is right about the localization of the approach and withdrawal responses, these different responses are produced in different parts of the brain. Together these points raise the question of what it is that the two instances would share in virtue of which both are considered the same emotion. The basic emotion project assumes that for each emotion a discrete neural structure produces a particular response, and so the response or the structure can serve as the basis for identifying an emotion. But having suggested that this is not the case, Davidson proposes instead that all instances

[9]Zajonc and McIntosh make the same point: ". . . emotional ANS activity occurs for diverse reasons, and this causal diversity does not promise consistency . . . . A freezing response [in fear] will generate a different ANS pattern than a fleeing response because they have completely different energy requirements for the organism" (1992, p. 73). And Cacioppo et al. (2000) put the same point in terms of the distinction between tactics and strategies: the "tactical variability [of the fear response] may account in part for the poor reliability of emotion-specific autonomic patterning" (p. 183).

of a certain emotion share a unique higher-order goal.[10] To be sure, the basic emotions theorists could possibly accommodate this view, but if they allow for a complex appraisal of the sort that would seem to be involved on Davidson's view, one that could generate a variety of response patterns, it is difficult to see how they could avoid a dramatic change in their understanding of what a basic emotion is.

The argument developed here (that there are instances of emotions lacking differentiated autonomic responses) and Davidson's argument (that instances of the same emotions can involve different neural structures) are not decisive against there being differentiated basic emotional responses. First, it could be that the focus on autonomic changes is too general: Cacioppo et al. (1993, p. 133) note that heart rate can increase, decrease or not change in response to an aversive stimulus because of coactivation of the sympathetic and parasympathetic nervous system. And so it may be possible to differentiate emotional responses if the activity of the sympathetic and parasympathetic systems are distinguished and taken into account separately. Or, it could be the case that responses are differentiated by especially complex patterns of autonomic changes that have not yet been discovered, or by other physiological responses like neuroendocrine changes. Nevertheless, Davidson's account for why we should not expect emotion-specific responses is a compelling argument against the first of these, and the pattern of results noted by Cacioppo et al. seems to cast doubt on the second.

Ekman himself concedes that we would not expect to find a specific physiological response for an emotion if there is or was no specific set of activities that would be adaptive; and so emotion-specific physiological changes are not the sine qua non for defining basic emotions (1992a, p. 182). In other words, the central feature on the basis of which an emotion can be identified as basic is its function — and even if an emotion has some specific function, it could be the product of a biologically given neural program that does not produce distinctive physiological responses. The interim conclusion here is that the research on autonomic responses provides no evidence that basic emotions can be identified with differentiated responses, or that each basic emotion serves or served a specific, adaptive function. So this research does not support the contention that there is a set of basic emotions.

[10]On this point Davidson cites Stein and Trabasso (1992). They propose capturing different goals in terms of different appraisal patterns for each of the basic emotions, patterns which are sensitive to the conditions causing a change in the status of some goal.

Evidence for Basic Emotions from Facial Expression

In contrast to the situation just described, in which the evidence for emotion-specific autonomic responses is not persuasive, Ekman has conducted a long series of studies showing that the facial expressions for five emotions — happiness, sadness, anger, fear and disgust — are pan-cultural (see, for example, Ekman, Friesen, and Ellsworth, 1982, and Ekman, 1980). Ekman presents this work as an extension of Darwin's (1872/1998) original observation, that analogs of human facial expression are present in primates.

In the earliest of these studies, subjects from different cultures were shown photographs of facial expressions and were asked to identify the emotion expressed in each. If facial expressions are not intrinsically connected to specific emotions, meaning that, if the connection between an emotion and a facial expression is arbitrary and varies across cultures, then we would expect the interpretations of the photographs to vary accordingly. But this was not the case. In a study of the sort just described, Ekman (1980) concluded, "In thirteen different countries, where nine languages were used, the same interpretation [of photographs] was obtained for the emotional [facial] expressions" (p. 93). In a series of follow-up studies: (1) Ekman showed that this result was not the product of cultural sharing — members of one culture do not learn to interpret the expressions of basic emotions found in other cultures (see Ekman, Friesen, and Ellsworth, 1982); and (2) he showed that at least some of the differences in facial expression found across cultures can be explained as the shaping of underlying, pan-cultural expressions (Ekman, 1980). Ekman takes this body of work to show that there is "*some* universal association between emotion and facial movements" — though the point might be put more precisely in this way: there are pan-cultural associations between some emotions and particular facial expressions (these expressions are not *universal* because there are human beings who do not make these facial expression as the result of a variety of physical disorders).[11]

Although Ekman only claims that the facts about facial expression are *consistent* with taking emotions to be basic in his sense of that term, he also implies that this evidence gives us reason to think that emotions are basic —

[11]Quote from Ekman (1980, p. 95). The body of work described in this paragraph has been criticized for relying on words that the researchers chose as translations for English emotion terms, and some claim that Ekman's results can only be replicated if subjects are given a very limited list of emotion terms. For a concise overview of this line of criticism, see Barr–Zisowitz (2000, pp. 616–618). For more detail, see Russell (1994), and Haidt and Keltner (1999). If this line of criticism is correct then the evidence from facial expressions provides no support for the basic emotions project. But I leave these criticisms aside because the case against basic emotions will be more compelling if there is no argument for basic emotions here even if Ekman is right.

at a minimum because the five emotions he identifies as basic are the five for which there is evidence of a pan-cultural facial expression (this argumentative structure is especially clear in Ekman [1992b]). Ekman actually claims that all emotions are basic, and he limits the reference of the term emotion to emotions that have the features noted above, one of which is a pan-cultural facial expression. Leaving aside this stronger claim to focus on the more narrow one, that the existence of pan-cultural facial expressions shows that some emotions are basic, Ekman's argument seems to have the following structure.

The data about pan-cultural facial expressions demand an evolutionary explanation: these emotions served some adaptive function for which their facial expressions were part of an appropriate response, and so the facial expressions were preserved, along with other response-components, over the course of human evolution. Such emotions are basic. This evolutionary story explains why facial expressions are pan-cultural, and the difference between facial expressions across emotions shows that each emotion serves a different function.[12]

There is another possible explanation for pan-cultural facial expressions, namely, that they serve as a form of communication, and Ekman gives an example of this sort: seeing the disgust expression on the face of another will indicate to me to avoid some particular bit of food (1992a, p. 177). Ekman cannot, however, claim that the function of a facial expression is communication and at the same time argue that an emotion is basic because it has a pan-cultural facial expression. The following example shows why this is the case: if sadness is an emotional reaction to loss and so serves no function but, instead, occurs when the powerful human instinct for forming social bonds is frustrated, then the facial expression of sadness could still serve a function, namely to solicit help. If this account of sadness is correct — and at a minimum it seems plausible — then we would be wrong to infer that sadness serves a function from the fact that it has a pan-cultural facial expression. And so Ekman could not infer that emotions are basic on the basis of their having a pan-cultural facial expression. For this reason, Ekman must argue that facial expressions serve the function in virtue of which the emotion was adaptive — as opposed to a communicative role.

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[12]Ekman (1992a) concedes that some kind of pan-cultural learning experience could produce pan-cultural expressions, but he argues that the examples used to defend this possibility are not persuasive. E.g., the pan-cultural facial expression of surprise does not rule out the possibility that all humans learn to raise their brows when surprised because it increases the field of vision. But, Ekman argues, the fact that congenitally blind children raise their brows when surprised tells against this explanation: presumably, blind children do not learn to raise their eyebrows in surprise because it improves their field of vision. Moreover, the presence of comparable expression in primates is further evidence against this possibility, because it is implausible to think that humans and animals would have the same kinds of learning experiences.

But that argument is problematic. The discussion of autonomic responses above made reference to instances of emotions that lack distinguishing autonomic changes: although that evidence does not offer a decisive argument against there being differentiated functional responses for each emotion, we cannot infer that emotions serve a function from the study of autonomic changes.

The same argument applies to the data on facial expression. A complete overview of the literature on the subject is outside the scope of this paper, but on the association of emotions and facial expressions, Davidson claims, "virtually nothing is known about the differential incidence of displaying specific discrete facial expressions in contexts in which those emotions are reported. We also know preciously little about whether different modalities of emotion elicitors (e.g., imagery and emotional film clips) are equally likely to produce facial expressions of emotion" (1993, p. 465; he provides no further citations). The implication, that many instances of emotion occur without associated facial expression, is also confirmed by our (or at least my) everyday experience.

Moreover, Davidson measured the facial expressions produced by subjects in response to film clips meant to elicit fear and disgust.[13] He used film clips that had been rated by hundreds of test subjects as producing relatively intense emotional experiences of fear or disgust, and they used the system for coding facial expressions devised by Ekman with W.V. Friesen. Davidson found that only 62% of subjects displayed the disgust expression in response to the disgust-inducing film clips, and not a single subject displayed the facial expression of fear or what the coding system calls "questionable fear" in response to the fear-inducing film clips. In the latter, 8.5% of the subjects showed one particular component of that expression (eye widening) and 18% showed at least one component (eye widening, lips pulled back or eyebrows raised). This was the case even though the subjects reported experiencing fear and disgust, and so the study supports the criticism advanced here against Ekman: instances of an emotion without the facial expression indicate that the function of facial expression cannot be associated with the function of the response as a whole in any consistent way. For this reason, the presence of a pan-cultural facial expression cannot be taken to be evidence that an emotion serves a function at all — so the fact of pan-cultural facial expression does not show that there are basic emotions.

[13]The experiment was performed by Davidson with A.J. Tomarken and reported in Davidson (1993). Though the point contributes to my argument only indirectly, note that Davidson also draws the following conclusion: emotions, here fear and disgust, differ in the relative probability with which they produce the appropriate facial expression.

The last step in this argument presupposes another point. It would seem, in contrast, that an emotional response could serve some function for which different variants are appropriate in different situations, and only some of these variants involve facial expressions. That is to say, in Davidson's study, the elicitors are too weak to trigger a differentiated facial expression, and this explains why subjects did not consistently produce facial expressions for a given emotion. But if, along this line of the criticism, the facial expressions for (say) strong and weak fear differ, that could be taken to suggest that these emotions are different — there is one emotion for which the facial expression serves a particular function and one for which it does not, and so the criticism lacks force. Davidson's critic could reply, arguing that the responses produced by strong and weak fear perform the same function and are mediated by the same neural structures, and so should be considered to be variants of the same emotion. This could well be the case but, on its own, the evidence about facial expressions is inconclusive; it is not acceptable in place of this more complex argument.[14]

Evidence about Functions Served by Supposedly Basic Emotions

In order to identify emotions with adaptive responses, proponents of basic emotions must specify the function served by each emotion — because it was this function that provided the emotion with its adaptive value. Though there is much speculation on the possible functions served by basic emotions, little of it is compelling, and if no function can be identified for a specific emotion, then the claim that that emotion is basic cannot get off the ground. The discussion here will focus on one emotion in detail, sadness, which is said to be basic on most accounts. It is difficult to offer a systematic argument on this point because there is no clearly formulated position to argue against, only a set of suggestions and intuitions, many offered without argument, but the discussion will show that no plausible function has been identified.

Barr–Zisowitz (2000) points out that sadness has not been well studied but that the studies done "concur in seeing sadness as an emotion experienced in the face of an event described as unpleasant; characteristically, sadness is seen as a response to a goal lost or not attained" (p. 608). On this characterization the suggestion that sadness is basic is already problematic in that, according to Ekman, basic emotions are supposed to serve functions related to interpersonal or inter-organismic encounters. Setting this problem aside, the proposals for the function of sadness fall into two categories.

[14]For a more detailed discussion of this line of argument and responses to potential objections — in particular, objections that there are covert facial expressions, that the film clips might not be adequate elicitors of fear, and that facial expressions could be suppressed, see Cohen (2002).

As an instance of the first, Izard and Ackerman (2000) note that sadness has the effect of slowing our motor and cognitive systems, and they propose that sadness could have adaptive value in promoting reflection on some failure,

> enabl[ing] a more careful look for the source of trouble and deeper reflection on a disappointing performance or a failure that instigated the sadness. This slower and more deliberate scrutiny of the self and the circumstances may help the individual gain a new perspective — one that facilitates plans for a better performance in the future. (p. 258)

This analysis is implausible (though nicely optimistic): the slowing down of cognitive systems they refer to is well documented in the psychology literature (see, for example, Ellis and Moore, 1999), but this slowdown would seem to interfere with careful scrutiny and problem solving. Moreover, sadness is also associated with avoidant behaviors, like taking a nap and listening to music (Cunningham, 1988),[15] and with a negative outlook on situations and events (Clark, Beck, and Alford, 1999).[16] Both of these findings also conflict with Izard and Ackerman's proposed function.

The supposed slowing of motor activities with sadness conflicts with the observation that sadness often involves an increased heart rate. An increase in heart rate with a simultaneous slowdown in motor activity could be produced by the antagonistic action of the sympathetic and parasympathetic nervous systems, but in the context of fear, the increase in heart rate is explained as functional in that it prepares the organism for physical action,

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[15]Cunningham's (1988) finding, cited in this paragraph and a subsequent one, concerned the effects of induced moods on subjects' actions. The relationship between mood and emotion, here depression and sadness, is usually made on the basis of duration and intentionality: emotions are relatively short-lived responses to particular events, while moods are persistent states that are not about particular events (so, depression is a generalized state while sadness is a response to a particular object/event). Cunningham notes that the effects of the mood-induction in his experiments were short-lived, and this supports the extension of his results to the case of sadness. At one point Cunningham himself generalizes his conclusion in this way, claiming that "all of those [activities] chosen as likely when depressed or *sad* were solitary actions" (p. 322, my emphasis). Barr–Zisowitz (2000) also takes Cunningham's results to apply to sadness, though without any justification. It is worth noting the following: in addition to providing evidence of avoidant behavior, Cunningham at the same time, and without attention to the conflict, endorses the view criticized in the main text, that negative mood creates a motivation to understand the mood-inducing event or to solve the problem.

[16]Clark, Beck, and Alford (1999) offer a systematic review of the clinical and empirical evidence supporting their characteriztion of depression in terms of pervasive, negatively-biased thinking about the self, the world and the future. Beck (1991, esp. p. 370) is explicit in generalizing this characterization from depression to sadness. Note that applying Beck's characterization of depression and sadness here does not require a broader acceptance of Beck's model of information processing or his therapeutic model.

and so in the case of sadness the same increase must now be explained away.[17]

Most important, even if sadness sometimes or even often promotes self-reflection, on this basis it cannot be said to be basic because self-reflection could not be produced by a neural program of the sort associated with basic emotions. So even if sadness often plays the role Izard describes, this role is not part of an explanation of how sadness became part of human psychology through evolution. At a minimum, in order to defend their assertion, Izard and Ackerman would have to show further that sadness indeed promotes positive and constructive self-reflection; and, moreover, they would then have to describe the features of the ancestral environment in which such behavior would be adaptive, and then they would have to argue that those features were actually present. In short, they would have to make a historical argument that sadness was selected for by evolution for its adaptive value in promoting self-reflection (see Toobey and Cosmides, 1990).

A second proposal, one that is common and is found in a variety of places, is that the function of sadness is to solicit help or elicit empathy.[18] But, again, this proposal conflicts with the empirical evidence showing that sadness is characterized by withdrawal (Cunningham, 1988). And even if the facial expression of sadness serves the function of soliciting help, as noted above, it is an error to infer from this that the emotion has this function. Moreover, even if a set of distinct universal antecedents is identified — perhaps defined in terms of loss — the function of sadness is still unclear because the emotion is the reaction to that loss, and the avoidance of sadness is not the motivation for preventing the loss.

The problems with these proposals suggest that sadness serves no function — or, at a minimum there is no reason to think it does serve a function. (Note: the claim is not that the feeling or phenomenological experience lacks function, though that is the case, too.) This argument attacks the foundation of the basic emotions approach: if sadness serves no function, then there is no basis for claiming that it is an adaptive response to a problem posed by the environment, and so there is no reason to think sadness is a basic emotion. In addition, if the facial expression is not part of an adaptive

[17]This point about proponents of basic emotions having to explain away the increased heart rate in sadness puts them in a difficult position. If they concede that some aspects of the responses are inessential to the function it serves, then it could follow that the response-components, as opposed to the response as a whole, make up the elementary explanatory unit. This is Ortony and Turner's (1990) contention, discussed in footnote six.

[18]This claim also appears in Izard and Ackerman (2000). They make a related suggestion, namely that the function of sadness is to strengthen social bonds, and in support of this claim they cite Averill (1968) on grief. Averill's paper is itself problematic but further discussion is outside the scope of this paper; see Cohen (2002).

response, the fact that it is pan-cultural would then require some other explanation. One possibility was suggested above, namely that if sadness is a response to loss, a response that can be especially strong because of the powerful drive humans have for forming and maintaining social bonds, it would seem to be adaptive to have a signal for that response. But the facial expression for sadness could serve this function only because it was already associated with and taken to be a marker of sadness, even though sadness itself does not serve a function.

The Deeper Problem with Basic Emotions: Responses Are Not Emotions

Taken together, the arguments advanced in the previous sections show that the basic emotions project is not supported by the available evidence: the data about autonomic responses and the documentation of pan-cultural facial expressions provide no basis for thinking that there is a set of basic emotions, each of which can be identified with a specific function that proved to be adaptive. Indeed, the research on ANS responses suggests the opposite, namely, that the human emotions cannot be associated with particular responses or functions. And, at least one supposed basic emotion, sadness, cannot be associated with a specific function, which closes off the possibility of its being basic. If parallel arguments could be advanced for the other supposedly basic emotions, it would be a decisive blow to the project. To be sure, fear seems to be an exception in that it serves a clear function (to avoid danger). But that said, the discussion above has made it clear that there might be no single response associated with this function, so even though the function is clear, the emotion might not be basic.

Setting aside the empirical question of whether or not there are basic responses, even if there were such responses, they would not be emotions or emotional.[19] The physiological and behavioral response to extreme cold is differentiated from other responses and has a particular form that enables the organism to respond to a problem it encounters in its environment. The response involves changes in blood flow and muscle tension, and behavior like shivering. But despite the fact that this response serves a clear function, and one that seems certain to have been adaptive, it is not considered to be an emotion. If the basic emotion theorists want to label the physiological and behavioral response to danger "the fear response" and identify it as a basic emotion, then they would have to say what difference there is between

[19]What follows is an adaptation of an argument made by Ortony and Turner (1990) in their attack on basic emotions. I do not have space to draw out the relationship between the argument here and their argument, but for a detailed discussion of this relationship, again see Cohen (2002).

the two responses, a difference in virtue of which one is an emotion and one is not. (Here the shift in terminology from the *fear response* to the *response to danger* is meant to expose the move made by the basic emotions project, namely their taking responses to be emotions without argument.)

The processes involved in producing the two responses might seem to differ in that the one associated with danger involves some kind of appraisal while the one associated with cold does not — and, accordingly, the presence of an appraisal could provide a basis for categorizing the danger response as an emotion. The intuition underlying this reply is the following: the danger response is generated by a process properly described as psychological and so counts as an emotion, while the process generating the cold response is of a more mechanical sort, like others involved in bioregulation (like, e.g., the process that produces antibodies in response to an infection). Moreover, the fact that the appraisal of danger concerns external stimuli while the cold response depends on the detection of changes in body temperature could seem to support this reply. Nevertheless, although the process at work in maintaining body temperature is not well understood, and even though little is known about how the thalamus processes incoming signals and selectively triggers the activity of the amygdala (which produces the danger response), this reply is inadequate: both processes depend on the activity of the thalamus, which suggests that the two processes are comparable, and also that the two can be differentiated as a group from the more complex psychological processes that take place in the cortex.

The use of the term *appraisal* here to refer to the process generating the danger response could be misleading, because it could be taken to imply that an elaborate, cognitively rich process is taking place in detecting danger. But there is an appraisal in both processes only in the weak sense that there is some minimal discrimination of information taking place. (Note that there could also be instances of fear that do require a more complex appraisal, like my fear that I will lose my life savings in the stock market; but this instance of fear would not be basic — meaning that the emotion-term fear could refer to both basic and non-basic emotions. Only basic emotions are at issue in this paper, and it is an open question of how basic and non-basic emotions are related and what they have in common. On this point see Cohen [2002].) It could be that the cold response is not the best choice as an example in my argument; Ortony and Turner (1990) use this example, and using a different one here would obscure this relationship, but the argument could be reformulated using another response, like dodging an oncoming object, which is made on the basis of a reflex-like appraisal of visual stimuli.

Ekman describes emotions as responses to inter-organismic problems, and this description might seem to offer a response to the challenge raised immediately above: fear is produced in response to my coming into contact with a

predator, anger in response to a situation of social conflict, and so on, but the reaction to extreme cold is not inter-active and is therefore not emotional.[20] This response is inadequate, however, because many of the supposedly basic emotional responses — like disgust and some instances of both sadness and fear (e.g., sadness at my loss of some precious object, and my fear of falling off of a cliff) — are not responses to inter-personal or inter-organismic encounters. Moreover, the choice of the inter-organismic cases as primary (and therefore as offering a criterion for a response being an emotion) seems arbitrary and ad hoc.

Lacking some principled basis on which to distinguish between the responses to cold and to danger, the advocates of basic emotions are forced to concede that the (supposedly) basic emotional responses are not emotions, and that at most the responses classified as emotional are distinguished from non-emotional ones by processes or experiences not present in the responses and so not captured in the work. For this reason, advocates of basic emotions must abandon the claim that they are studying emotions or anything emotional, though they could maintain — and correctly — that their work concerns the precursors of emotion. This conclusion holds even if autonomic responses are distinct, and even if those responses can be associated with a specific function. For example, the physiological and behavioral reaction to social conflict could be basic but it does not follow that this response is anger or that it is an emotion. This fall-back position, that basic responses serve as pre-cursors of emotions, does not insure that there will be any sort of one-to-one mapping between the basic responses and emotions; the categories of basic responses could be quite different from our emotion categories.

Alternatively, the advocates of basic emotions could let the term emotion go and embrace a kind of eliminativism.[21] John Watson did exactly this, giving up the distinction between emotional and non-emotional responses. In the quote below (in the parenthetical comment) he acknowledges that on his view emotional responses are just visceral responses; nothing distinguishes emotional reactions from other visceral ones and so we should abandon the search for a theory of emotion.

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[20]Ekman's characterization of the function of emotion in these terms was quoted in the main text; see his 1992a article, p. 171. Ekman seems not to notice the conflict between this claim and the one noted in the next sentence in his own text, that at least one of his basic emotions — disgust — is not a response to an inter-personal encounter.

[21]Another response along this line of thought would be to allow that the response to cold is emotional as well, but this seems to open up the definition of emotion too broadly; including every response in the category of emotion doesn't help any more than eliminating the category. See Cohen (2002) on the subject.

> certain unconditioned stimuli arousing total bodily reactions called "fear," "rage," "love," can be substituted for just as in the simple reflex field we have studied. This accounts for the ever-increasing number of stimuli that can call out emotional (really visceral) reactions. This experimental work does away with the necessity for any "theory" of the emotions such of that of James [that is concerned with inner experience].[22]

In sum, on the first reply, advocates of basic emotions acknowledge that their view confuses responses for emotions, and they will have to look beyond the responses to offer a theory of emotion. On the second, the category of emotion is eliminated.

Conclusion: Toward a Comprehensive Theory of Emotions

LeDoux's (1996) research on neural pathways shows that pre-conscious processes produce responses prior to our experience of an emotion, meaning that these responses are not the products of emotional experience — again, we do not have the response to danger because we are afraid. For this reason an adequate account of emotion will have to be Jamesian in placing responses prior to emotional experience. The fundamental theoretical question surrounding emotion is then, how are responses related to emotions and emotional experience?

Accounts of basic emotions offer one possibility in identifying emotions with responses and setting aside conscious experience as inessential. But the empirical arguments advanced above show that an emotion cannot be identified with a distinct response, and perhaps not even with a clearly circumscribed function. Moreover, the conceptual argument showed that responses are not emotions or emotional, so an account of responses cannot amount to a theory of emotions.

As noted, to the degree that they are concerned with emotional experience or feeling, with what we mean by "emotion" colloquially, advocates of basic emotions could follow James and take emotional experience to be the perception and experience of emotional responses. This extension of the basic emotions project seems to offer a reply to the conceptual argument. But emotions on the Jamesian view feel different from each other because the physiological and behavioral changes for each differ. And the empirical evidence outlined above shows that autonomic responses do not differ across emotions, so this part of James's view is inadequate: if, for example, the response to danger is not always accompanied by a particular autonomic

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[22]Watson (1924/1970, p. 38). On emotions more generally and on William James's work in particular, see pp. 140–143. Epstein and Hatfield's (1994) point about "cognitive behaviorism," mentioned in footnote three, is also relevant here.

response, the distinct feeling of fear cannot be the perception and experience of a set of autonomic changes specific to danger. Put differently, the Jamesian account of experience comes at the cost of not being able to explain how two emotions can feel different: if the responses to danger and the attainment of some goal are not differentiated, then on the Jamesian account the experience of fear and happiness should be the same. And so James's account of experience does not save the basic emotions approach.

Nevertheless, the two-stage *structure* of the Jamesian account as a whole, an appraisal generating a response followed by a second cognitive process that produces experience, seems to be required by (1) the evidence about emotion-appraisals being pre-conscious, and (2) the conceptual argument showing that an account of emotion needs to proceed beyond an account of responses. James himself described physiological responses as following the direct perception of a stimuli; it is unclear if he is best understood as suggesting that there is an appraisal or immediate perceptual recognition, but this textual question is not at issue. The point here is that an account of emotion must be Jamesian in structure in that it distinguishes between the cognitive process generating the response and the subsequent cognitive process generating experience. That said, James's account of the second stage as bodily-directed introspection is inadequate for the reason just noted, because the experience of undifferentiated responses could not generate differentiated emotional experience.

The conceptual argument suggests an alternative, namely that the second stage is interpretive. That argument takes as a starting point a characterization of emotions as fundamentally intentional states. The response to cold is not intentional in the sense of being about the surrounding temperature or its immediate cause, and the force of the argument is that the response to danger is not about its cause either. Lacking the appropriate intentionality — in the sense of experienced aboutness — responses can only be thought of as pre-emotional; only when meaning is ascribed to a response can that response be about some object, and thereby become an emotion. This line of argument suggests the following: the second stage in a two-stage model of emotion is one in which meaning is ascribed to a response, and the resulting experience of that response as being about some situation or event constitutes the emotion. This process could be labeled interpretive or self-interpretive, and for this reason emotions are best thought of as arising from an interaction between bodily states and cognitive processes (in the second stage) that are, at least in part, about those states. This interpretive process will, in general, not be conscious, though conscious reflection on it could affect the resulting emotion.[23]

[23]See Wilson (2002) for a more general account of the two-level structure of the mind.

This account of the second stage as interpretive explains how emotions can arise starting with undifferentiated responses, and so it adapts James's approach taking into account the empirical argument about responses not being distinct. If there is some small number of basic responses, perhaps two — responses to danger and to social conflict — these could serve as pre-cursors of emotions that do not correspond to our emotions in a one-to-one way; the ascription of meanings to indistinct response could produce specific emotions, which are responses experienced as being about some object or state of affairs. And this account of the second stage resolves the problem raised by the conceptual argument, in that it accounts for the intentional gap between responses and emotions.

To be sure, more remains to be said about this sort of account of emotion, and more needs to be said about the interpretive/meaning-ascribing process, but the argument for a model of emotion with two stages should be clear (for more detail see Cohen, 2002). And although recent work in basic emotions confuses responses for emotions, the underlying empirical work forms the foundation for this a general theoretical account.

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