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Could Emotion Development Really Be the Acquisition of Emotion Concepts?

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Emotion development research centrally concerns capacities to produce emotions and to think about them. We distinguish these enterprises and consider a novel account of how they might be related. On one recent account, the capacity to have emotions of various kinds comes by way of the acquisition of emotion concepts. This account relies on a constructionist theory of emotions and an embodied theory of emotion concepts. We explicate these elements, then raise a challenge for the approach. It appears to be incompatible with various familiar ways in which cognitions about one's own emotions can come apart from episodes of emotion.

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Research on the development of emotions is diverse in theory, method, and aims. Some of it involves no particular theoretical commitments about what emotions are, much less about the nature of emotion concepts. For instance, some research on the development of facial expressions (Holodynksi & Seeger, 2019) or on the influence of childhood emotional stress on subsequent development (Pollak, 2005) can be pursued without settling theoretical issues regarding the nature of emotions or emotion concepts. But emotion development centrally concerns development of the capacities to produce emotions and to think about them. Hence some central issues regarding emotional development seem to require an account of the nature of emotions and emotion concepts. Here are two such issues:

> Emotional development: When and how do various different emotions emerge in development?

Thus, for instance, Lewis (2014) offered a general theory of development, and a timeline at which various different emotions typically emerge over the first three plus years of life. On this account, "primary" emotions such as joy, disgust and fear arise first, followed by "self-conscious" emotions including empathy, jealousy, and embarrassment, followed by "self-conscious evaluative" emotions including pride and shame. Notice that the question here (and Lewis's answers) are about the emotions themselves—when and how do individuals begin to be in states that are instances of a given emotion category (type, or kind)? Answers to this question inevitably involve or presuppose claims about what counts as being angry, sad, and so forth.

> Emotion–cognition development: When and how do capacities to recognize and understand the emotions—to have cognitive states that represent emotions—emerge in development?

This is at least partly a question about our concepts of emotions—the mental entities by means of which people are able to have thoughts that count as being about emotions, and that can thus be correct or incorrect classifications of various states as instances of emotion categories. Somewhere along her developmental trajectory, for example, a child's understanding of fear will involve having a concept FEAR that she applies to some states and not others and that helps to explain, among other things, her competent use of the word *fear*. Yet it is controversial at what stage to attribute such concepts. For instance, there are clearly differences between simple script-based attributions of emotion (which are based on recognition of links between objective eliciting circumstances of various emotions and certain behaviors and expressions that these circumstances often elicit, generating distinct scripts for anger, fear, etc.) and more sophisticated psychological understandings, which attribute emotion by appreciating the beliefs and desires the emoter brings to a situation and the appraisals she makes of it. These more sophisticated understandings enable older children to recognize that the same situation can elicit different emotions depending on the desires and appraisals that an individual brings to it. (See Harris, de Rosnay, & Pons, 2016, and Widen, 2016, for reviews of work in this field.) Depending on one's view of emotion concepts, one might or might not suppose that the latter set of competencies is required to possess, say, the concept FEAR.

The above pair of issues are surely central ones for a developmental psychology of emotion. Moreover, as we have seen, how one answers them depends crucially on two further contested questions: What are emotions? and What are emotion concepts? As a consequence, answering these latter questions can have important implications for one's view of development. However, the direction of influence can also go in the opposite direction: Views about development can have implications for

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our theories of what emotions and emotion concepts are. Each of these directions of influence holds out the promise of progress. In recent years, partly on the basis of developmental considerations, some affective scientists have grown skeptical of the historically prominent idea that various emotions, such as fear and anger, are basic emotions: functional natural kinds, underwritten by special purpose mechanisms that are universal to human biology and cognitive architecture. In the present volume, such skepticism is pressed in different ways by Lobue and Adolph (2019) and Hoemann, Xu, and Barrett (2019). The former use developmental considerations to try to undermine the basic emotion approach. The latter use theoretical claims about the nature of emotions, driven partly by a rejection of basic emotion theory, as starting points for a new theory of emotion development.

One idea that fits neatly with basic emotion theory, and indeed is asserted explicitly by some of its prominent defenders, is the claim that various emotions emerge very early in development and are evolutionarily preprepared to be elicited by certain sorts of challenges that confronted our ancestors. Thus, for instance, it has been thought that certain cues for fear such as snakes and precipices do not need to be learned from culture but emerge independently. Lobue and Adolphs challenge this claim in the case of fear, arguing that various evidence that has been adduced to show that infants exhibit fear of heights, snakes, and strangers does not in fact show this. A crucial issue throughout their discussion is whether the behavior that these infants exhibit counts as fear or whether it is something else—for instance a perceptual bias of some kind. Settling that question decisively requires, among other things, settling what would count as fear. Although they express views about what emotions are, it is worth highlighting that their work here proceeds from more modest premises. Lobue and Adolph instead identify certain symptoms that they treat as diagnostic (though not definitive) for the presence of fear. They require the presence of negative affect and at least one converging behavioral or physiological measure. This test is likely to be considerably less controversial than are any of the various theories of the nature of fear, inasmuch as it is compatible with many different such theories. Given this test, they argue that the existing evidence does not support attribution of fear to infants in their responses to snakes, heights, or strangers. This is an appealingly ecumenical method of advancing research on the development of discrete emotions.

In contrast, Hoemann et al. (2019) confront large and contested theoretical issues about the nature of emotions and emotion concepts more directly. They offer a theory of emotion development that depends crucially on theories of the nature of emotion and the nature of emotion concepts. Their program is deeply inventive and demands to be explored. But we have reservations about some of its implications. In the rest of this discussion, we have a pair of aims. First, we seek to explain and clarify some core features of their novel account of emotional development. Specifically, we focus on the way in which their account of what emotions are interacts with their theory of emotion concepts. Second, we pose an explanatory challenge to their account of emotional development. In particular, we suggest that their proposal requires some modification or elaboration if it is to accommodate various sorts of mundane emotion cognition.

Emotional Development as Conceptual Development

Though there is much of interest in this rich article, its primary objective is to sketch a theory of emotional development. To this end, Hoemann et al. adopt what in our view is a thoroughly novel hypothesis that merits exploration:

> Emotional development just is the process of learning emotion concepts.

On this view, for example, it is by acquiring the concept ANGRY that I am both able to perceive and think about anger, and also to become angry—to experience anger. To express the point in a slightly different manner: On this view, it turns out that addressing the pair of central problems mentioned in our introduction—emotional development and emotion–cognition development—really only requires one explanation: an explanation of how emotion concepts are learned. For, once learned, such concepts not only permit the child to categorize and think about emotions, but also to exhibit emotions—that is, to be in states that count as instances of the categories represented by emotion concepts.

It's worth pausing to underscore what a very remarkable suggestion this is. In the course of development, human beings routinely develop a great many capacities—to walk, see, and sing, for example. They also routinely acquire concepts that enable them to recognize and think about such capacities. But it is seldom the case that the development of the capacity simply consists in acquiring the related concept. On the face of it, for example, learning to walk is not the same thing as acquiring the concept of walking; acquiring the capacity to see isn't the same thing as acquiring the concept of sight; and learning to sing isn't the same thing as acquiring the concept of singing. No doubt there are lots of interesting relations between such capacities and their paired concepts. But surely the development or acquisition of one is not the very same thing as the acquisition of the other. Not so for the emotions and their concepts. Or so Hoemann et al. maintain.

What would lead them to endorse such a surprising view? As we see it, the hypothesis arises from the combination of two central assumptions—the first regarding the nature of emotions, the second regarding the nature of emotion concepts. Though crucial to their account of emotional development, these assumptions are treated only briefly in their article. As a consequence, our explication relies, in part, on other publications that they cite but do not fully explain here.

Constructionism About the Emotions

The first assumption is a version of constructionism about the emotions. Constructionists reject the widespread view that some emotion kinds have an underlying nature that is there to be discovered, independent of human beliefs about it. Instead, they hold, these kinds are products our own taxonomies, whereby we try to impose order and meaning on the diversity of human experience and behavior. Emotion terms such as *fear* name categories that are much vaguer and more flexible than common sense supposes, the instances of which vary greatly depending on the culture, the person, and the context in which they appear. Moreover, it is not just the broad categories or kinds that are constructed, but their instances as well. Understood as episodes or occurrent states, emotions are not triggered firings of domain-specific mechanisms,

rather they "are constructed at the time of occurrence from simpler ingredients that are general ingredients of the mind (and body)" (Russell, 2015, p. 184).

These suggestions are common to constructionist theories in general. The version advocated by Hoemann et al. is, however, richer, more distinctive, and stronger in its commitments. In particular, as we understand it, their theory holds that the deployment (or activation) of an emotion concept (at least partially) constitutes the occurrence of an emotion episode. As they put it, "The basic hypothesis is that emotional events derive from an active, constructive process within the brain. The brain starts with current conditions and creates an ad hoc, embodied concept (Hoemann et al., 2019).

Given this view of what emotions are, the key to developing the capacity to have emotions is acquiring the corresponding concepts. As Barrett puts it,

> The seeds of emotion are planted in infancy, as you hear an emotion word (say "annoyed") over and over in highly varied situations. The word "annoyed" holds this population of diverse instances together as a concept, "Annoyance. . . ." Once you have this concept established in your conceptual system, you can construct instances of annoyance. (Barrett, 2017, p. 110)

Viewed in isolation, such a view may seem implausible. By very broad consent—Hoemann et al. included—having an ("instance of") emotion frequently involves various sorts of elements, including physiological, cognitive, affective, and behavioral states or processes. However variable these responses may be across cultures and contexts, such elements are among the central phenomena of emotionality. Hence a central task for an account of emotion development will be to explain why these phenomena occur. Yet without further elaboration, it would be mysterious how the mere possession of emotion concepts—and the attendant capacity to categorize specific events as instances of emotion types—could explain the capacity to have these complex suites of emotional symptoms under various culturally and contextually appropriate circumstances.[1] This is where the second key assumption of this approach in intended to do work: the embodied theory of concepts.

An Embodied Theory of Emotion Concepts

On many standard views, concepts are construed as a species of amodal, structured mental representation—for example, definitions, or prototypes—that are stored in long-term memory, and recruited in various cognitive tasks, such as inference and categorization. As such, they are largely independent of the sorts of emotional phenomena just mentioned—whence the mystery noted above. Yet Hoemann et al. do not adopt this standard view. Rather, they advocate an *embodied* account of emotion concepts of the sort developed by Larry Barsalou and others (Barsalou, Dutriaux, & Scheepers, 2018). On this view, emotion concepts are not amodal ("central") representations, but rather distributed networks of neural connections drawn between a multitude of different brain states and processes—especially ones involved in perception, motor control, and affect. Such networks may be thought of as *simulators*: structures that, given inputs of the right sort, activate (in a situationally relevant manner) some subset of the perceptual, motor control, and affective states associated with the relevant category (Barsalou, 2009). Thus, for example, under relevant circumstances, the deployment of one's FEAR concept, may consist in, among other things, the activation of perceptual states associated with past experiences of fear, as well as changes in autonomic response, and in overt behavior. Sometimes this activation will be generated in a "bottom–up" fashion by perceptual inputs, but on other occasions it can be the agent's internal "top–down" neural activity, which activates the concept, thereby enabling us to conceptualize emotions.

For our purposes, the crucial thing to note about this embodied view of emotion concepts, is that the affect, cognitions, motor activities, and perceptions of bodily and behavioral changes that are part of what an ordinary emotional episode involves will somehow be bound together by distributed, brain-wide simulations, each of which is an instance of a concept (Barsalou, 2009). Some of these elements of an emotion episode will be generated by predictive processes in the brain, whereas others may be present already and get linked together through the simulative activity that constitutes an activation of the emotion concept. As they put it, "The brain starts with current conditions and creates an ad hoc, embodied concept, reinstating prior experiences that are similar to the present. In this way, a brain is continuously assembling prediction signals that prepare the body for situation-specific action, creating perceptions and experiences" (Hoemann et al., 2019).

With the above in mind, we are now in a position to see why, on this embodied view, it is no longer mysterious why the possession of emotion concepts might explain the capacity to have emotional episodes. This is because, on such a view, emotion concepts *just are* neural simulators that (among other things) assemble the various brain states and processes underlying the symptoms of an emotion. The concept is activated by the presence of some of these symptoms, and via patterns of association it produces other ones; and together they constitute a particular instance of a constructed emotion episode with contextually relevant features. Thus the puzzle with which we started now appears to have a solution. Emotional development really could consist in the acquisition of emotion concepts because (on the present view) emotion concepts just are the sorts of things whose deployment (under appropriate conditions) result in patterns of (contextually relevant) symptoms of the sort associated with the emotion category they represent. Thus, for example, the concept FEAR not only represents instances of fear—thereby permitting inferences and categorization judgments—its deployment also involves the activation of the various sorts of (contextually relevant) perceptual, motor and affect states associated with fear.

The Puzzle of Independence

Although combining constructionism about the emotions with an embodied theory of emotion concepts helps address our initial puzzle, the resulting view has further puzzling consequences that we find hard to accept. In particular, it appears incorrectly to suggest that cognitions about emotion and emotional episodes

[1] In calling the thoughts, feelings, and bodily changes involved in so many emotional episodes "symptoms" we do not mean to suggest that they are something distinct and downstream from the emotional episode. They are properly better understood as parts or "elements" of the episode, even if none of them are necessary to the occurrence of an instance of this emotion type.

cannot vary independently of each other in certain apparently familiar ways.

Note first that it seems genuinely possible for someone to have a wide array of cognitions—for example, perceptions and thoughts—regarding a given emotion, such as anger, without actually having that emotion—that is, *being angry*. However, it's not immediately clear how this could be true if activating the ANGER concept sufficed for both thinking about anger and being angry. Clearly, Hoemann et al. require some additional factor that allows them to accommodate such an apparently mundane phenomenon. But what might it be?

Barrett (2017) made a suggestion that might seem to resolve this issue. Having briefly sketched the constructionist view of emotions, she suggests the following way to draw a distinction between a cognition involving a given emotion concept (say, ANNOYANCE) and an episode of that emotion:

> Once you have this concept established in your conceptual system, you can construct instances of annoyance. If the focus of your attention is on yourself during categorization, then you construct an experience of annoyance. If your attention is on another person, you construct a perception of annoyance. (Barrett, 2017, p. 110)

On this proposal, what determines whether some activity involving the activation of an emotion concept counts as having an episode of that emotion is whether one's attention is focused on the self or another. But this proposal does not fully address our concern. This is because, on the face of it, there's a difference between thinking of myself being annoyed and being annoyed.[2] This difference comes out in many familiar sorts of cases:

> Case 1: It seems that I am capable of thinking about a past event in which I was annoyed (happy, sad, etc.), or some potential future event in which I will be annoyed (happy, sad, etc.); or perhaps even some merely counterfactual scenario in which I would be annoyed (happy, sad, etc.). Presumably, when exercising such capacities I both deploy my emotion concepts, and focus attention on myself. In doing so, I may well rely on neural machinery that overlaps considerably with those mechanisms that are activated when I am actually annoyed (happy, sad, etc.). For all that, it will not be the case that I must actually be annoyed in order to think about such cases.
>
> Case 2: Things appear even less satisfactory for cases that involve cognitions representing the *absence* of an emotion, such as anger. On the face of it, there are situations when a person can accurately judge that they are *not* angry. Yet on standard assumptions, such a categorization will involve the deployment of the relevant concept, ANGER. And since, in such instances, attention is focused on oneself, the present proposal will yield the strange consequence that a person is always angry when judging themselves not to be angry! Clearly, more needs to be said about negative self-assessments, if such a consequence is to be avoided.
>
> Case 3: It seems that at the very same time that I am angry ((happy, sad, etc.), I am capable of thinking about a past event in which I was not angry (happy, sad, etc.), or some potential future event in which I will not be angry (happy, sad, etc.); or perhaps even some merely counterfactual scenario in which I would not be angry (happy, sad, etc.). But it's not clear how to understand such phenomena on the view under consideration. If self-focused deployment of the ANGER concept suffices for being angry, then why aren't I angry in such circumstances? Again, more needs to be said in order to explain such apparently obvious phenomena.

Of course, the above brief discussion doesn't show that our puzzle cannot be resolved. That would require far more extensive argument. Rather, our point is that the view under consideration appears to generate a prima facie empirical puzzle: Assuming both constructionism about emotions, and the embodied account of emotion concepts, how can cognitions about emotion vary independently of emotion episodes in the manner in which they appear to do so?

Further, as we hope to have made clear, this puzzle is not generated by gratuitous assumptions that the theory can easily jettison. Rather, it results from precisely those assumptions that made it plausible to treat emotional development as a species of concept learning in the first place.

In this commentary we have emphasized respects in which issues about emotion development relate to questions about the nature of emotions and emotion concepts. In some cases (LoBue & Adolph, 2019), developmental studies can put pressure on theories of emotion without presupposing a particular theory—this is what we called an *ecumenical approach*. In others (Hoemann et al., 2019), commitments about the nature of emotions and emotion concepts supply constraints on the theory of emotion development. Each puts important pressure on the influential basic emotion tradition. The challenges we have articulated for the program of Hoemann et al. show that the less ecumenical approach brings distinctive risks.

[2] An attentive reader may worry that the quoted passage draws a contrast between being annoyed and having a perception of being annoyed, rather than a thought of being annoyed. There may indeed be important differences between different ways of cognizing annoyance. But Barrett is probably not relying on them, because she says, "Our common sense might declare that thinking, perceiving, and dreaming are different mental events (at least to those of us in Western cultures), yet one general process describes them all. Simulation is the default mode for all mental activity. It also holds a key to unlocking the mystery of how the brain creates emotions" (Barrett, 2017, pp. 27–28).

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