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The Embodiment of Emotion

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Emotions are cognitive in that they involve some level of understanding of what is going on in the world or in one's own body. The cognitive nature of the emotions, however, does not imply that they are merely "brainy." Brain and body are deeply interrelated, and emotions should therefore be regarded as thoroughly embodied.

We live in the age of the brain. As Fernando Vidal and Francisco Ortega argue in their 2017 book *Being Brains: Making the Cerebral Subject*, we identify our subjectivity with brain processes. We think that we are fundamentally our brains. A related aspect of this ideology is that we think that the brain is the powerhouse of the mind. Before you read any further, you may try this: enter "mind" or "cognition" into Google Images. Done? What did you find? Most probably pictures of heads and brains — some even projecting light around them, as if the mind were an emanation of energy from the brain. The idea that the mind is in the head, or is caused by the brain, or literally *is* the brain is deeply entrenched in our culture. It is apparent also in the conversational gesture of pointing to one's forehead to refer to the activity of thinking. And as a lecturer, I have noted that my students often (and increasingly) use "brain-talk" to describe how they feel or think, often saying things like: "my brain is not very quick today," or "I don't understand, my brain is hurting!"

At the same time, we are also intimately familiar with mental states that clearly appear to involve the *body* (for expository purposes, "body" here refers specifically to organs and processes located in the biological organism outside the brain). These mental states are

our *emotions*: fear, anger, joy, sadness, jealousy, disgust, embarrassment, and so on. When we are in an emotional state, we often display characteristic facial expressions and other behaviours (we cry when sad, blush when embarrassed, tense up when angry, etc.). We also *feel* our body changing. For instance, we experience our heart beating fast when we are agitated or angry, e.g., before speaking in public or if someone aggressively accuses us. It is difficult to imagine having an emotion without the body undergoing any change or without feeling any bodily sensation. Famously, the philosopher William James thought this was actually *impossible*. In a much-debated article published in 1884, he claimed that a purely disembodied emotion is a nonentity — it cannot exist. If you take the body away from an emotion, all you are left with is a feelingless state of “cold cognition.”

Contemporary philosophers and psychologists recognize that the body is often involved in emotion. However, they emphasize that emotions are primarily *cognitive* mental states: Emotions include cognition — that is, knowledge or understanding (from the Latin *cognoscere*: to know, to come to know, to judge). In particular, contemporary theorists emphasize that emotions involve cognitive judgments and evaluations (also called “appraisals”). Being scared or agitated before speaking in public, for example, is said to involve the appraisal that one might say silly things, or be ill-judged by others; being sad and worried when not finding one’s cat involves the judgment that the cat is valuable to one, that she might be hurt, and so on.

It is certainly important to stress that emotions are cognitive. In the history of emotion theory, however, this claim has often led to dismissing and side-lining the body. Psychological and philosophical accounts popular in the ’60s and ’70s illustrate this phenomenon well. In those years the body was often regarded as neither sufficient nor necessary for emotion. In other words, emotions were conceived of as *entirely* cognitive or “brainy” (as cognition was, and still is, generally regarded as taking place entirely in the brain). The fact that one’s heart accelerates before speaking in public was seen as a mere contingent concomitant of fear; that is, such reactions are something that happens,

sometimes or even often, but that does not *have* to happen for fear to occur — one would still be scared as long as one judged that speaking in public is scary.

The situation is different today, as most emotion theorists and affective scientists conceive of emotions as *both* cognitive and bodily. They regard cognitive appraisals as *well* as various bodily changes (in facial and vocal expression, posture, behaviour, autonomic nervous system activity) as central aspects, or “components,” of emotion. This view does not imply that every emotional episode must come with changes in *all* of these components. The claim is, rather, that changes in these components are typical of the clearest cases of emotion.

Is it accurate to say, then, that affective scientists today regard emotions as embodied mental states rather than as merely brainy ones? Well, yes and no. Yes, because, as just noted, they often regard bodily changes as typical components of emotions, next to cognitive/brain components. No, however, because the role they assign to the body in emotion is still secondary and ancillary to the one of cognition and the brain. In a nutshell: The body has been reinstated in emotion theory, but it still does not have the same status of the brain.

This situation can be seen as yet another manifestation of the “ideology of the cerebral subject” denounced by Ortega and Vidal and mentioned at the start. Emotions, many affective scientists insist, are cognitive and therefore intelligent. And where does the intelligence of the emotions reside? In the brain, of course — for where else could it reside, if the brain is considered the seat of cognition? In other words, contemporary affective science recognizes that the body plays an important role in emotion, yet characterizes this role not as one of understanding or making sense of the world, but as a practical one of reacting to stimuli in order to mobilize action. The intelligent work of evaluating the environment remains a prerogative of brain-located cognition.

There are reasons to question this view. A main one has to do with physiology. The more we know about the workings of the organism, the less the brain appears to be an organ of control, with the body serving merely to keep it alive. What physiology tells us,

instead, is that the brain and the body are interrelated in complex ways, at multiple levels and timescales. Given such a deep integration, it is not clear that we can attribute “pure” cognitive functions to the brain only, and non-cognitive, simply reactive functions to the body. Relatedly, it is not clear that we can neatly separate the cognitive/brainy components of emotion from the bodily ones.

Take, for example, the case of stress. Many affective scientists regard the brain as the physical basis of emotions. They claim that the brain (or rather specific parts of it) evaluates stimuli in the environment, and subsequently generates or produces corresponding emotions — such as fear in response to (brain-detected) danger, sadness in response to (brain-detected) loss, and so on. Relatedly, they regard stress as a response to brain-detected threat. They also claim that the brain drives and controls the bodily changes that occur as a consequence of the brain evaluating the environment. Both claims are manifestations of a *brainocentric* perspective that privileges the brain over other parts of the organism when explaining how emotions come about and unfold.

When one looks at *physiological* accounts of stress, however, one notes that they have long claimed that various endocrine bodily organs and processes influence how the organism responds to challenging (i.e., stressful) situations. Physiological accounts of stress do not focus on the brain only, but describe how certain parts of the brain (the hypothalamus) interact with endocrine glands located in the body (the pituitary and the adrenal glands) and with the hormones released by these glands (e.g., corticotropic releasing hormone, adrenocorticotropic hormone, glucocorticoids). The standard physiological story is that the brain responds to stressors by releasing hormones that influence endocrine glands in the body, which *in turn* release further hormones that have various effects on *both* body and brain. In humans, the adrenal glands release cortisol — a glucocorticoid that can rapidly reach various bodily organs as well as the brain. Once in the brain, cortisol can influence its own synthesis by inhibiting the secretory activity of the hypothalamus. This negative feedback loop illustrates nicely that it is not just the brain that

regulates the body, but also the other way around. This fact alone puts pressure on brainocentrism, because it shows that an emotion such as stress is not adequately characterized solely as a brain process, nor as a brain-body process that is entirely generated and controlled by the brain.

And this is not the end of the story. Further fascinating recent evidence shows that plasma concentration of glucocorticoids oscillates hourly and, moreover, independently of the brain (for details and references, see Colombetti & Zavala, 2019). Importantly for the notion of embodiment, this oscillation dynamically influences how the organism responds to the environment. For example, rats react more aggressively toward a social intruder when their glucocorticoid levels are rising, compared to when they are falling. This evidence challenges brainocentrism further, because it illustrates that stress is not entirely determined and controlled by the brain but depends on bodily processes as well, some of which are even independent from the brain.

Still, this is not *yet* the end of the story — because, in addition, the stress system described so far influences, and is in turn influenced by, various other physiological processes occurring at the level of the immune and the gastrointestinal system, including the gut microbiota (the many different bacteria and other microorganisms that live in the gut). Given this complexity, to say that stress is an emotion generated and controlled by the brain appears decidedly misleading.

What about other emotional states, though? One might think that stress is an exception in its involvement of so many physiological processes. Not so. Evidence is mounting that depression and anxiety, too, recruit specific changes not just in brain neurochemistry but also in endocrine and immune processes, including gut microbiota (see Colombetti & Zavala, 2019, for details). And stress, depression, and anxiety often come together and feed one another, and importantly also influence a range of other emotional states, including short-lived ones. More precisely, stress, anxiety, and depression can be seen as overarching affective conditions that determine the range of emotional responses one is likely to exhibit at any given time — very much like climate zones (e.g., temperate or

arid) determine the likelihood of specific local weather patterns (rain, drought, etc.). We also know from experience that being depressed makes one more prone to feeling dejected, hopeless, or guilty; the same stimulus, such a mild critical remark, will affect a depressed and a non-depressed person differently. Similarly for stress and anxiety.

The upshot is that it seems neither possible nor advisable to regard stress and other emotional states as based entirely or primarily in the brain. Many short-lived emotional responses to stimuli arguably depend on more global, longer lasting emotional conditions (sometimes also called “moods” and “mood disorders”) whose physiological bases straddle mutually influencing brain and bodily processes. And more generally, brain and body are *a/ways* interacting and influencing one another—not just during stress, anxiety, or depression. Given this integration, it does not seem possible to divide the realm of emotional states into the embodied ones, and the merely brainy ones.

In sum, to regard emotion as properly embodied entails going beyond acknowledging that it involves bodily changes. Embodiment as an alternative to braincentrism should also challenge the popular assumption that the cognitive or intelligent dimension of emotion depends entirely on the brain. As physiology tells us that the body is so intimately coupled or integrated with the brain, the body then ought not be seen as a mere reactant. Rather, the body ought to be seen as an active participant in the process of making sense of stimuli and situations beyond its borders.

For Further Reading

Colombetti, G. (2014). *The feeling body: Affective science meets the enactive mind*.

Cambridge MA: MIT Press.

Colombetti, G., & Zavala, E. (2019). Are emotions based in the brain? A critique of affective braincentrism from a physiological perspective. *Biology and Philosophy*, 34, 45.

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Fordham University Press.