
On the Primacy of Cognition

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Abstract: Zajonc and I differ greatly in our conceptualization of emotion and its relations with cognition, as well as in our evaluation of the evidence. My reply is in two parts. First, I discuss the boundaries of emotion as a phenomenon and whether sensory preferences can be regarded as emotions; second, I make an analysis of the evidence Zajonc regards as supporting his claims for the independence of cognition and emotion and the primacy of emotion. My aims are to sharpen the philosophical and empirical issues that underlie our disagreement and to emphasize the indeterminacy of the issue of cognitive versus emotional primacy. This latter issue is less important than the task of exploring the cognitive contents or meanings that shape each kind of emotional reaction. Finally, I offer a brief programmatic statement about what cognitivists can do to advance our understanding of emotion over the life course.

The latest riposte by Zajonc (1984) has, in my view, not helped to clarify our understanding of the relationship between cognition and emotion. Zajonc takes my reasoning (Lazarus, 1982) to task in two major ways. First he complains that my position cannot be falsified because I defined emotion as requiring cognitive appraisal, then that I have ignored the evidence that emotion can occur without cognitive activity, which he cites. I believe he is wrong about my epistemological position and wrong that the evidence supports the primacy of emotion or its independence from cognition. The body of this reply consists of a discussion of the definitional issue and why I think the empirical case he makes is specious. My objective is to sharpen the issue and sustain my position and that of like-minded cognitivists.

The Definitional Issue

Definitions do not arise out of the blue; they are an integral part of a theory that helps delimit the phenomena of interest and organize observations. In my view, emotion reflects a constantly changing person-environment relationship. When central life agendas (e.g., biological survival, personal and social values and goals) are engaged, this relationship becomes a source of emotion. Therefore, an emotional experience cannot be understood solely in terms of what happens inside the person or in the brain, but grows

out of ongoing transactions with the environment that are evaluated.

Cognitive activity is a necessary precondition of emotion because to experience an emotion, people must comprehend—whether in the form of a primitive evaluative perception or a highly differentiated symbolic process—that their well-being is implicated in a transaction, for better or worse. A creature that is oblivious to the significance of what is happening for its well-being does not react with an emotion. This same point has been stated cogently in various ways by numerous multidisciplinary scholars who responded recently to an article on a general psychobiological theory of emotions by Panksepp (1982) appearing in *The Behavioral and Brain Sciences*.

The conception that the meaning or significance of a transaction is crucial to emotion forces us to restrict its definition to some psychophysiological phenomena and to reject others as outside its purview. The searching question is what an emotion is or is not. Zajonc evades this question. Thus, he takes me to task for doing what any good theorist should do with definitions, but he does not do himself—namely, specify the phenomena of interest. Emotion, for example, is not just physiological arousal, though such arousal is one of the traditional defining attributes. Arousal can be produced by exercising vigorously or entering a hot or cold room. Doing this will produce an emotion only if we appraise the encounter (e.g., the physical and social conditions and the bodily state it produces) as having a bearing on our well-being, as when, for example, it presents some physical danger or brings blissful relief from discomfort.

Startle is a reaction that has long but erroneously been included under the rubric of emotion. Ekman (in press) presents new experimental evidence that startle might better be regarded as a reflex, like the knee jerk, because it does not behave as do other reactions we call emotions. He examined facial and bodily responses under four conditions: when subjects did not know at what moment a blank pistol would be fired; when they did know the moment; when they tried to inhibit the startle reaction; and when they attempted to simulate a genuine startle. Ekman contrasted emotions with startle. He found that the startle was easy to elicit and was consistently the initial response to a gunshot; in contrast, there is no single elicitor that will always call forth the same emotion in adults. Moreover, the startle response could not

be totally inhibited; in contrast, emotions can. Nor could the startle be simulated correctly by any subject. On the basis of these findings, the startle response seems fixed and rigid in comparison to emotions, and once elicited it seems to run its course. Thus, from the perspective of a relational and cognitive conceptualization of emotion, I think we should exclude startle from the rubric of emotion, as I advocated in my earlier discussion in this journal (Lazarus, 1982).

Historically, there has been much concern about diverse phenomena for which emotion terms are employed, such as moods, sentiments, emotion traits, and actual emotional reactions (cf. Ortony & Clore, 1981). Moods usually refer to sustained general states, such as sadness and contentment, that may or may not be considered emotions depending on theoretical and definitional conventions. Sentiments refer to characteristic ways a person evaluates an object (person, idea, thing); they operate as dispositions to react emotionally to that object but are not in themselves emotions. Another questionable category of emotion consists of personality traits, such as *cheerful*, which could in some instances describe an actual emotion, as in "I feel cheerful," but could in other instances describe a trait, not an actual emotional response, as in "I am a cheerful person." Some emotion terms are heavily detached, lukewarm, or cold, such as *interested*, whereas others, such as *enraged*, are hot. As Ortony and Clore pointed out, it makes a considerable difference how such terms are used by subjects in emotion research.

In the 1940s and 1950s, a period characterized by the scientific outlook sometimes called logical positivism, the dominant view in psychology was that emotions could not be defined and studied as such but represented intervening variables (cf. Brown & Farber, 1951; Lazarus, 1968; Lazarus, Kanner, & Folkman, 1980). Although similar attitudes still exist, the more restrictive treatment of emotions in the past has given way to a view that allows much greater latitude in their study; this view depends heavily on what subjects report, but can be supplemented by simultaneous assessments of behavioral and physiological response variables. Emotions are commonly conceptualized and studied as an organic mix of action impulses and bodily expressions, diverse positive or dysphoric (subjective) cognitive-affective states, and physiological disturbances. Although there are arguments about whether these physiological disturbances are diffuse or patterned, an emotion is not

definable solely by behavior, subjective reports, or physiological changes; its identification requires all three components, since each one can be generated by conditions that do not necessarily elicit emotion, as in the example of arousal by exercise given above. An emotion researcher must worry about which response states or processes can be called emotions and which cannot; meeting one or even two of the three response criteria is not enough.

With respect to the debate between Zajonc and me, a critical question is, On what basis should preferences (e.g., for taste, smell, or photographs of faces) be regarded as emotions? We must ask a similar question about aesthetic reactions to a pretty picture, a pleasing sunset, a stirring piece of music, or a fine piece of literature. Some years ago, while examining emotion and feeling in psychology and art, Arnheim (1958) pointed out that emotion in artistic experience is not merely a passive receipt or apprehension of information, but requires active, involved participation. As with sensory preferences, what may pass for an emotional (aesthetic) response may be nothing more than a pro forma statement that implies emotion but does not necessarily reflect it, as when one casually says, "That's a pretty picture" in a manner more indicative of labeling than emotion.

Although preferences can involve emotions, even strong ones, they often seem to fall at the ambiguous borderline between emotion and nonemotion. On the one hand, statements of preference can be "cold cognitions" expressing merely a social requirement to make a choice, or on the other hand, they can be expressions of genuine emotional involvement. In the research Zajonc cites, we do not know whether in expressing a preference (e.g., "I like him more") subjects are experiencing an emotion, as indicated by multileveled response criteria, or merely expressing an intellectual choice. If the latter, then preferences must be excluded from the category of emotions; if the former, they fall under the rubric of emotion. Zajonc fails to come to grips with this problem, and he makes no mention of the alternative states that could be indicated when subjects give reports about their sensory preferences.

Zajonc defines cognition as requiring some kind of transformation of a present or past sensory input, and in his current article he notes that untransformed sensory input is just pure sensation. Indeed we are constructed to respond neurally to certain inputs, such as noxious tastes and smells and to pain-inducing assaults on our tissues. And although Steiner (1973) has shown that newborn infants' facial expressions discriminate among salty, sweet, and sour tastes, a process he regards as "hard-wired," he did not suggest that such expressions signify emotional reactions, preferring to use the neutral term *gustofacial responses*. Tomkins (1982) explicitly excluded pain and

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pleasure from the category of emotions. We can also develop preferences through reinforcement learning, or through *canalization*, to use Murphy's (1947) concept.

What would transform sensory states into emotions? The transformation necessary to produce an emotion out of sensory states is an appraisal that those states are favorable or damaging to one's well-being. When we cognize an event as pleasant or unpleasant, we are not experiencing an emotion. However, when we further cognize that we are or may be personally benefited or harmed, the cognitive transformation has gone beyond the mere registration of discomfort, and the experience becomes an emotion.

Rather than the question Zajonc ponders, which is whether emotion can occur without cognition, I think it is more interesting and useful to ask about the kinds of cognition (or meanings; see Kreitler & Kreitler, 1976) capable of arousing emotions of different kinds and intensities, such as fear, anger, guilt, disappointment, sadness, joy, relief, happiness, and love at different stages of life. These are some of the emotions of great significance in human affairs because they arise from our changing functional relationships with the world and reflect our appraisal of how we are faring in our personal and social agendas. Zajonc's question, although legitimate, is subordinate to the larger issue of how cognition shapes emotion; it is also only relevant in certain very limited and unusual circumstances. Although we should try to understand sensory preferences and aesthetic appreciation, I believe that these phenomena often, though not always, fall under a separate rubric and, like startle, may require a different conceptualization.

Zajonc's Empirical Evidence: A Personal View

What I find remarkable is Zajonc's insistence that I have provided no evidence that cognitive activity precedes emotion and his simultaneous insistence that there is abundant evidence for the opposite proposition. In pressing this point in both of his articles, Zajonc offers long lists of studies purporting to suggest, if not prove, the primacy of emotion or affect, and its independence from cognition. The studies cited do not, in my estimation, prove these points at all. I do not have the space to rebut each study. Nor can I effectively take up others' criticisms of Zajonc's evidence (e.g., Birnbaum, 1981; Birnbaum & Mellers, 1979a, 1979b; Mellers, 1981) or Zajonc's (1981) rejoinder. I must restrict myself here to general comments about the major themes.

The essence of my position is, in fact, that at this stage of theory, knowledge, and method, Zajonc can no more prove that a cognition is *not* present in any emotion, much less before it occurs, than I can

prove it *is* present. Zajonc (1984) concedes this in his statement, "Of course the question contested here cannot be *fully* resolved unless we have a full understanding of consciousness. Such an understanding is at the moment beyond our reach" (p. 118). This is, incidentally, why in my earlier statement (Lazarus, 1982) about the relations between emotion and cognition I ignored the evidence he cited in his 1980 article.

Zajonc and I are separated by a philosophical difference. This difference might allow him to answer that, although the issue cannot yet be fully resolved, the scales of plausibility might be tipped in favor of affective primacy by the evidence. Zajonc could be called a neo-positivist, whereas I am more of a constructivist, and we differ on the role that theory plays in shaping our observations and our interpretations of nature. There are many styles of explanation that can be scientifically rigorous, as Haugeland (1978) pointed out in his defense of cognitivism in psychology. In contrast with Zajonc, I agree with the indeterminacy stance that Tetlock and Levi (1982) adopted in their review and analysis of the cognition-motivation debate among attribution researchers. They stated,

(1) Current cognitive and motivational explanations are not distinguishable on the basis of attributional data (i.e., lack of conceptual disconfirmability), and (2) advocates of cognitive and motivational explanations should devote more effort to clarifying ambiguities in their own theoretical positions than to seeking a crucial experiment that gives a decisive advantage to either a cognitive or motivational analysis. (p. 70)

Tetlock and Levi added the provocative comment that "neither side is likely to 'win' the cognition-motivation debate as currently formulated" (p. 83). Although this debate is cast in terms of cognition and motivation, it applies equally well to the relationship between cognition and emotion.

Although I maintain that cognition (of meaning) is a necessary precondition for emotion, this does not imply that emotions, once elicited, do not affect cognition. Emotions appear to be powerful influences on how we think and interpret events. They are the *result* of cognition but in turn affect cognition. The causal linkages one perceives among emotion, motivation, and cognition depend, in part, on where in an ongoing behavior sequence one arbitrarily stops the action (Lazarus, Coyne, & Folkman, 1982).

What would it take to prove that emotion is independent of cognition and even precedes it? Zajonc would have to show that there was not the slightest trace of an evaluative perception or thought when an emotion occurred; conversely, I would have to show that whenever an emotion occurred it was always preceded by a cognitive appraisal process. At present I believe that neither of these proofs is possible.

On the other hand, if the central question were "Does cognitive appraisal affect emotion?" rather than "Does emotion *require* cognitive appraisal?" there would be abundant supportive evidence. My own laboratory in the 1960s produced a series of psychophysiological studies using motion picture films to generate stress reactions. These studies made a strong case that when cognitive appraisal processes are altered, stress reactions (and emotions) are altered too. We had physiological as well as behavioral and/or subjective response criteria of emotion, something missing in the studies Zajonc cites. Soundtracks and orienting passages, designed to increase threat, or to encourage either denial of or psychological distancing from the disturbing events portrayed in the films, were used to manipulate cognitive activity. The evidence, fully reviewed elsewhere (e.g., Lazarus, 1968; Lazarus, Averill, & Opton, 1970), showed that how events are appraised determines the intensity and quality of the emotions generated. Since then, numerous studies from other laboratories have confirmed and expanded the case for cognitive factors in emotion.

Zajonc (1984) does not acknowledge this evidence when he states, "Nowhere in Lazarus's article is there any empirical evidence to suggest that cognitive appraisal must precede affect" (p. 121). If the word *must* is deleted from the above quote, then the case is indeed strong for concluding that when cognitions change, emotions change.

What sort of evidence does Zajonc provide to tip the scales of plausibility in demonstrating that emotion is independent of cognition and can even precede it? The first line of evidence is that "Affective reactions show phylogenetic and ontogenetic primacy" (p. 119). With respect to ontogenesis, Zajonc cites an article by Izard (1984) that reviews what Zajonc takes to be convincing evidence of the primacy of emotion in infants. Nevertheless, the methodological as well as theoretical state of the art in developmental research make it doubtful that a good case can be made that infants are *not capable* of making cognitive appraisals that result in emotion. Moreover, a growing number of developmental psychologists (e.g., Campos, Cicchetti, Cowan, Hesse, Hoffman, Kagan, Lewis, Sroufe, Weiner) have either explicitly adopted the position that cognitive appraisal shapes emotional patterns, or have supported the principle implicitly by emphasizing the early development of a differentiated (cognitive) concept of self that has a strong influence in human affairs. Their work provides the beginnings of documentation for the role of cognition in emotion from a developmental perspective, although to my knowledge they have not explicitly commented on whether cognitive activity is a necessary precondition of emotion, nor argued the case for either the separation of thought and feeling or their interdependence.

With respect to phylogenetic primacy, the methodological difficulties of evaluating cognitive activity in infrahuman animals should make us wary of accepting statements about what animals can or cannot accomplish cognitively. I am doubtful that any statement about the absence of cognitive appraisal processes in an animal, even a simple evaluative perception studied experimentally or in the field, could be made without substantial doubt.

A second line of evidence in Izard's review, on which Zajonc draws heavily, is based on reductionistic thinking. Zajonc's brand of reductionism is to emphasize the existence of "Separate neuroanatomical structures . . . for affect and cognition" (p. 119), specifically, right- and left-hemispheric control of emotion and speech, and neural pathways that run directly from retina to hypothalamus. A look into split-brain research strongly suggests, however, that this is an area in which confusion still reigns, making it dangerous to pontificate about what the findings mean for the relations between emotion and cognition. What is more, I am convinced that Zajonc has gotten his neurophysiology wrong (e.g., see Davidson & Fox, 1982). Research on the neurophysiological bases of emotion, as important as it ultimately will be, does not now provide grounds for choosing between Zajonc's or my views on the role of cognition, despite Zajonc's claim. No less a figure than Roger Sperry, the progenitor of split brain research, has recently offered some relevant thoughts on the neural organization of emotion and cognition that belie their total separation. Sperry (1982) wrote,

Unlike other aspects of cognitive functioning, emotions have never really been readily confinable to one hemisphere. Though generated by lateralized input, the emotional effects tend to spread rapidly to involve both hemispheres, apparently through crossed fiber systems in the undivided brain stem. In the tests for self-consciousness and social awareness, it was found that even subtle shades of emotion or semantic connotations generated in the right hemisphere could help the left hemisphere guess the stimulus known only to the right hemisphere. The results suggested that this affective, connotational, or semantic component could play an important role in cognitive processing. (pp. 1225-1226)

I remind the reader also that until very recently neurophysiologists believed that there could be no volitional control over the activities of visceral organs, the functioning of these organs being under the control of the autonomic or "involuntary" nervous system. This "knowledge" of anatomy and neurophysiology was later to be proven wrong, or at least incomplete (see the historical review by Anchor, Beck, Sieveking, & Adkins, 1982), leading to extensive clinical work on what is today called biofeedback. Biofeedback control of visceral activity is possible because there are numerous interconnections in the nervous system

between the nerve pathways that regulate skeletal action and visceral function.

Efforts to deal with areas of confusion in psychological theory by reduction to anatomy and physiology usually represent an attempt to clarify obscurities at one level of analysis by reference to obscurities at another. Rarely if ever does this legerdemain clarify obscure mechanisms at either level. Here too one can observe the philosophical breach that exists between Zajonc and me. As Hauge-land (1978) stated, "A common misconception is that reductions supplant the explanations they reduce—that is, render them superfluous. This is not so" (p. 217). However the connections between the psychological and physiological levels of analysis are conceived, explanations at each level must be both viable and independent even before any attempt at reduction is made in an effort to achieve the dream of a unified science.

A third line of evidence discussed by Zajonc is that "Appraisal and affect are often uncorrelated and disjoint" (p. 119). One study cited in this connection (Petty & Cacioppo, 1981) demonstrates, I believe, a casual and selective approach to research findings. Zajonc writes, "If cognitive appraisal is a necessary determinant of affect, then changing appraisal should result in a change of affect. This is most frequently not so, and persuasion is one of the weakest methods of attitude change" (p. 120). Now really! The entire line of psychophysiological research from my laboratory I cited earlier demonstrated via multiple methods of manipulation and observation that soundtracks played along with a movie, and even presented prior to its viewing, could drastically alter the film's emotional impact. Further, if the failure of persuasion is at all relevant to this argument, it tells us only that it may not always be easy to alter how people think about themselves and the world they live in, which is precisely why psychotherapy is such a difficult art. Zajonc's positivist philosophical bent is reflected, incidentally, in his equation of persuasion with the stimulus designed to produce change.

A fourth line of evidence is presented to support the claim that "New affective reactions can be established without an apparent participation of appraisal" (p. 120), and a motley collection of studies is offered to support it. One of these is an interesting study of taste aversion to food (the conditioned stimulus) which was established even when nausea (the conditioned response) had been delayed and then obliterated by anaesthesia; presumably the animal was unconscious when the association between the food and the nausea was established. Zajonc states that "It is highly unlikely that any sort of appraisal process, even unconscious, could have been involved when the animal rejected the CS food following conditioning" (p. 120). Even if one accepts the questionable premise

that nausea is an emotion, unlikelihood is hardly proof, and even the claim of unlikelihood is questionable, especially when the conclusion is based on the uncertain effects of drugs. Total unconsciousness and subclinical nausea before consciousness set in (e.g., during the so-called delay of nausea) cannot be ruled out, as Zajonc implies. Drug effects always pose great problems for interpretation because of the many unintended neurochemical events that take place along with the target effects. This and other studies cited by Zajonc do not at all eliminate the possibility that cognitive activity was involved in each case of an emotional response.

Conclusions

The idea that emotion and cognition are independent has a long history and is presently maintained by highly respected theorists such as Tomkins (1981, 1982). If one could reasonably argue for their independence, whether on physiological or behavioral grounds, then it follows logically that there could also be affective primacy. However, that independence can be argued logically does not make it the best theory. For the way emotion is commonly experienced, I think that approaches emphasizing the neurophysiological and psychological separation of emotion and cognition are less fruitful than the cognitive theory I and many others espouse. The evidence is strong that emotions are highly sensitive to changes in the person-environment relationship and the way these changes are appraised. The fundamental task of a cognitively oriented theory of emotion is to propose how this works. Ironically, the proposition that cognitive appraisal is a necessary condition of emotion is more parsimonious than the one Zajonc argues. I see no reason at this writing to accept the more complex system of thought—unspecified as to causal conditions—that sometimes cognition is causal and sometimes not.

The relational and meaning-centered view I espouse has many other virtues. For example, it helps us understand and predict (see Folkman & Lazarus, in press) the tremendous inter- and intraindividual variation observed in the intensity and quality of experienced emotions, the rapid flux of emotion and its responsiveness to feedback, the powerful social and cultural influences on emotion, and its ontogenetic as well as phylogenetic aspects. In the case of ontogenesis, for example, research can delineate the child's changing grasp of social meanings to identify the patterns of cognitive appraisal that underlie diverse emotions in a social encounter. Such research would not be generated by a view of emotions as independent of cognition.

Polemics aside, the major task of those who adopt a relational view of emotion is to develop more precise theory about the conditions underlying diverse emo-

tion qualities and intensities and their flux. Cognitive formulations should specify how various personal agendas, such as values, goals, and commitments, as well as beliefs or expectations about oneself and the world, shape cognitive appraisal over the life span and, in so doing, affect the propensity to experience certain emotions in particular environmental contexts. Attention might be directed at anticipatory emotions such as those involved in threat and challenge appraisals (e.g., uneasiness and eagerness), as well as outcome emotions that follow encounters that have harmed or benefited the person (e.g., disappointment or relief). A growing number of scholars are now struggling with this kind of theoretical program. If emerging cognitive theories are promulgated with sufficient precision and detail, we will be in a good position eventually to predict emotional reactions from the circumstances people face in their daily encounters of living.

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