

Thoughts on the Relations Between Emotion and Cognition

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ABSTRACT: *This paper argues that thought is a necessary condition of emotion. It therefore opposes the stance taken by Zajonc, which reflects two widespread misunderstandings about what is meant by cognitive processes in emotion: (a) that a cognitive appraisal of the significance of an encounter for one's well-being must occur in fixed stages through the information processing of initially meaningless inputs from the environment; and (b) that such an appraisal is necessarily deliberate, rational, and conscious. Some of the phylogenetic and ontogenetic implications of a cognitive theory of emotion are also discussed briefly.*

Recent years have seen a major change in the way psychologists view emotion—the rediscovery that emotions are products of cognitive processes. The emotional response is elicited by an evaluative perception in lower animals, and in humans by a complex cognitive appraisal of the significance of events for one's well-being.

Although there are many other issues concerning the relations between emotion and cognition, my comments will focus on the role of thought in the emotional response. I will refer often to Zajonc's (1980) challenge to the assumption that cognition occurs prior to emotion. I use his views to illustrate widespread misunderstandings of what it means to speak of cognition as a causal antecedent of emotion; I also use his views as a point of departure for my argument that cognitive activity is a *necessary* as well as sufficient condition of emotion.

Do Emotions Require Cognitive Mediation?

My own position on this question is a variant of a family of theories of emotion centered on the concept of cognitive appraisal. Campos and Sternberg (1981) state, for example, that "The recent history of the study of emotion has been dominated by approaches stressing cognitive factors. In theories of adult emotional response, cognitive appraisal now functions as the central construct" (p. 273). Its role is to mediate the relationship between

the person and the environment. The appraisal process gives rise to a particular emotion with greater or lesser intensity depending on how the relationship is evaluated with respect to the person's well-being. Cognitive appraisal means that the way one interprets one's plight at any given moment is crucial to the emotional response.

Cognition and emotion are usually fused in nature (Folkman, Schaefer, & Lazarus, 1979), although they can be dissociated in certain unusual or abnormal states. For example, cognitive coping processes (cf. Lazarus, 1981) such as isolation and intellectualization (or detachment), which are aimed at regulating feelings, can create a dissociation between thoughts and feelings. Moreover, attack can occur without anger, and avoidance without fear. These latter conditions are also instances in which the usual link between thought and feeling has been loosened or broken. Yet such separations are less often a rule of living and more often a product of coping under special circumstances. The full experience of emotion (as opposed to sham rage, for example) normally includes three fused components: thoughts, action impulses, and somatic disturbances. When these components are dissociated we are left with something other than what we mean by a true emotional state. Our theories of emotion must reflect the normal fusion, and separating thoughts, action impulses, and somatic disturbances except under certain specifiable conditions (as was done in the old days of faculty psychology—which treated cognition, emotion, and motivation as independent entities) distorts rather than clarifies the structure of the mind (cf. Lazarus, Coyne, & Folkman, 1982).

One bit of fallout from the above analysis is the implication, often derived from statements of cognitive theory, that cognitive appraisal is a necessary

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as well as sufficient condition of emotion. Such a position has been criticized trenchantly by Zajonc (1980). He writes that affect is erroneously regarded in contemporary psychological theory as postcognitive, occurring only after extensive cognitive operations have taken place, and that in actuality affective judgments are fairly independent of, and even precede, the perceptual and cognitive activities on which they are said to depend. Zajonc argues that not only can affect occur without extensive perceptual and cognitive encoding—and even before—but that affect and cognition are controlled by separate and partially independent neural systems (see also Tomkins, 1981). Zajonc thus seems to be saying two things contrary to what I have argued: first, that the proposed directionality in which cognition determines affect is wrong and that the actual direction is affect to cognition; and second, that cognition and affect should be regarded as relatively independent subsystems rather than as fused and highly interdependent.

Building his argument, Zajonc cites a stanza of poetry from e. e. cummings (1973):

since feeling is first
who pays any attention
to the syntax of things
will never wholly kiss you. (p. 160)

He also cites Wundt's (1907) concept of affective primacy, and Bartlett (1932), Ittelson (1973), Osgood (1962), and Premack (1976) as having adopted the view that feelings come first. He states, for example:

In fact, it is entirely possible that the very first stage of the organism's reaction to stimuli and the very first elements in retrieval are affective. It is further possible that we can like something or be afraid of it before we know precisely what it is and perhaps even *without* knowing what it is. (p. 154)

The most serious mistake in Zajonc's analysis lies in his approach to cognition, which is characteristic of much of present-day cognitive psychology. In this approach information and meaning stem from the conception of mind as an analogue to a computer (Shannon & Weaver, 1962), a view illustrated also by the work of Newell and Simon (1961) and Weiner (1960). This conception has been rebutted by Dreyfus (1972), Polanyi (1958, 1966), and others, although the rebuttal has not affected the mainstream of cognitive psychology. The mainstream stance is that meanings for decision and action are built up from essentially meaningless stimulus display elements or bits and that systematic scanning of this display generates information. Thus, human cognition, like the operations

of a computer, proceeds by serially receiving, registering, encoding, storing for the short- or long-run, and retrieving meaningless bits—a transformation to meaning that is called "information processing." Meanings and their associated emotions, or hot cognitions as Abelson (1963) referred to them, are built through such processing. As Erdelyi (1974) and others (e.g., Neisser, 1967) have suggested, however, emotion can influence the process at any of its stages. With this in mind, it is not surprising that Zajonc might be troubled by the implication that emotion lies at the end of a tortuous cognitive chain of information processing, and therefore find it necessary to suggest an independent system making possible rapid, nonreflective emotional reactions.

As many have argued (Folkman et al., 1979; Wrubel, Benner, & Lazarus, 1981), humans are meaning-oriented, meaning-creating creatures who constantly evaluate events from the perspective of their well-being and react emotionally to some of these evaluations. Zajonc is therefore correct in asserting that meanings are immediately inherent in emotionally laden transactions without lengthy or sequential processing, but for the wrong reasons. In my view, the concept of meaning defined by the traditional information processing approach subscribed to by Zajonc has a perfectly reasonable—and better—alternative.

We do not always have to await revelation from information processing to unravel the environmental code. As was argued in the New Look movement in perception, personal factors such as beliefs, expectations, and motives or commitments influence attention and appraisal at the very outset of any encounter. Concern with individual differences leads inevitably to concern with personal meanings and to the factors that shape such meanings. We actively select and shape experience and in some degree mold it to our own requirements (see also Rychlak, 1981). Information processing as an exclusive model of cognition is insufficiently concerned with the person as a source of meaning.

The history of debate about the phenomenon of subception is instructive (see Eriksen, 1956, 1960, 1962; Lazarus, 1956; Lazarus & McCleary, 1951). In a controversial experiment, McCleary and I showed that by associating a set of nonsense syllables to the threat of a painful electric shock, subjects would later react with a galvanic skin response selectively to the shock-associated syllables, even when they had misperceived and misreported them. We referred to this phenomenon as "autonomic discrimination without awareness," or "sub-

ception," arguing that subjects somehow sensed the threat without consciously recognizing the syllables.

The debate sparked by this interpretation touched on many complex issues, but it mainly centered on a claim by Bricker and Chapanis (1953) and Eriksen (1956, 1960, 1962) that even though the subjects had misreported what had been flashed on the screen, they probably had registered perceptually some of the structural elements of the syllables and had, in effect, reacted automatically (emotionally) to "partial cues" of threat.

My response (Lazarus, 1956) was that it was reasonable to assume that perceptions are often global or spherical rather than built sequentially from structural elements and that emotionally relevant meanings (connotations) could be triggered by inputs whose full-fledged denotations had not yet been achieved. An anecdotal example might be that when people misperceive the word *cigarette*, they do not necessarily report a structural equivalent such as *pencil*, but a meaning equivalent such as *smoke* (cf. Werner, 1948). All this accords nicely with Zajonc's insistence that emotional or affective meaning comes early, even before one knows what the object or event is. However, I reject the assumption that this early presence means that it is detached from or independent of cognitive appraisal.

If one accepts the principle that meaning lies at the end of a seriatim cognitive processing, then accommodating the fact that we can react emotionally instantly, that is, at the onset of a transaction, forces us to abandon the idea that emotion and cognition are necessarily connected causally and to adopt the position that emotion and cognition are separate psychological systems. This is exactly what Zajonc does.

However, we do not have to have complete information to react emotionally to meaning. We can react to incomplete information, which in fact we do in most ordinary transactions. The meaning derived from incomplete information can, of course, be vague; we need to allow for this type of meaning as well as for clearly articulated and thoroughly processed meaning.

Zajonc actually appears ambivalent about the cognitive involvement in emotion, as displayed in the many qualifying phrases he uses in speaking of affect or feeling. In the abstract of his article, for example, he writes that "affective judgments may be *fairly* independent . . . of perceptual and cognitive operations commonly assumed to be the

basis of these affective judgments. . . . Affective reactions can occur without *extensive* perceptual and cognitive encoding" (p. 151, emphasis added), and he refers to "affective judgments" (p. 157), implying that cognitive judgment is indeed involved in emotion.

Addressing some of Zajonc's statements from my perspective highlights the difference in our views. For example, he writes, "in fact, it is entirely possible that the very first stage of the organism's reaction to stimuli and the very first elements of retrieval are affective" (p. 154). This is acceptable if one adds that this is so only because evaluation or cognitive appraisal also begins at the start. In this connection it is noteworthy that earlier on the same page, Zajonc states, "In nearly all cases, however, feeling is not free of thought, nor is thought free of feelings." With this I agree wholeheartedly. Later Zajonc writes that for most human decisions

it is very difficult to demonstrate that there have actually been *any* prior cognitive processes whatsoever. One might argue that these are cases in which one alternative so overwhelmingly dominates all the others that only a *minimum* of cognitive participation is required and that is why the cognitive involvement preceding such decisions is so hard to detect. (p. 155, second emphasis added)

Where, then, are we left with respect to the question of whether cognitive mediation is a necessary condition for emotion? By and large cognitive appraisal (of meaning or significance) underlies and is an integral feature of all emotional states. Are there any exceptions? I think not, and I underscore qualifications by Zajonc such as "minimum cognitive participation" to reflect that emotion or feeling is never totally independent of cognition, even when the emotional response is instantaneous and nonreflective, as emphasized in Arnold's (1960) use of the term *appraisal*. This is the real import of the expression "hot cognition." The thought and feelings are simultaneous. The only doubts I have are in the arena of phylogenetically based triggers or releasers of fear in humans such as those postulated by Hebb (1946). Perhaps humans are "instinctually" wired to react with fear to spiders, snakes, or strangeness. However, many of these tendencies (such as the sucking reflex) seem to disappear or at least go underground with an ontogenetic shift to higher mental processes, just as they seem to disappear or go underground with the phylogenetic accretions of the neocortex that only suppress or regulate but do not banish lower functions.

For all intents and purposes, therefore, meaning (in the sense of significance for well-being), whether

primitive or advanced, is always an essential component of such reactions. Such meaning exists not merely in the environmental display, but inheres in the cognitive structures and commitments developed over a lifetime that determine the personal and hence emotional significance of any person-environment encounter.

Some Widespread Confusions About Cognition

In his discussion of cognitive activity in emotion, Zajonc errs in his understanding of cognitive appraisal, displaying a confusion that is widespread and had been dealt with much earlier in my original treatment of appraisal (Lazarus, 1966). The cognitive activity in appraisal does not imply anything about deliberate reflection, rationality, or awareness. Nevertheless, Zajonc (1980) writes:

The rabbit cannot stop to contemplate the length of the snake's fangs or the geometry of its markings. If the rabbit is to escape, the action must be undertaken long before the completion of even a simple cognitive process—before, in fact, the rabbit has fully established and verified that a nearby movement might reveal a snake in all its coiled glory. The decision to run must be made on the basis of *minimal cognitive engagement*. (p. 156, emphasis added)

This would obviously have to be correct. It must be remembered, however, that as a result of its neural inheritance and experience the rabbit already has cognitive schemata that signify danger instantly at the sound of a slight rustle in the grass or the sight of a dimly perceived shape. Although the schemata required in human social affairs are apt to be far more complex and symbolic, the appraisal of danger does not have to be *deliberate*.

Zajonc, like many others, also seems to erroneously equate cognition with *rationality*. He writes, for example:

Unlike judgments of objective stimulus properties, affective reactions that often accompany these judgments cannot always be voluntarily controlled. Most often, these experiences occur whether one wants them to or not. One might be able to control the expression of emotion but not the experience of it itself. It is for this very reason that law, science, sports, education, and other institutions of society keep devising ever new means of making judgments "objective." We wish some decisions to be more independent of these virtually inescapable reactions. (p. 156)

Such a statement implies that cognition is rational whereas feeling is irrational and primitive, a view that goes back to classical Greek times and that was also emphasized by the Catholic Church during the Middle Ages. Even today most psy-

chologists treat emotions as primitive, midbrain phenomena, whereas reason is seen to reflect human phylogenetic superiority and as vulnerable to being overwhelmed by the primitivizing effects of passion (see Averill, 1974). One of the most influential of the cognitive behavior therapists, Ellis (1962), has argued in accord with this centuries-old tradition that faulty belief premises underlie psychopathology, creating distressing emotional states when the person reacts to situations on the basis of such premises. The treatment is designed to help the person give up the faulty beliefs so that he or she can operate more effectively and with less misery. However, in my view even positively toned, healthy emotions such as joy, peacefulness, love, and certainly many human commitments which sustain morale, rest on shared or private illusions (Lazarus, in press) and depend on beliefs whose accuracy is often irrelevant to the elicitation of the emotion. The point is that cognition cannot be equated with rationality. The cognitive appraisals that shape our emotional reactions can distort reality as well as reflect it realistically.

Finally, cognitive appraisal does not necessarily imply *awareness* of the factors in any encounter on which it rests. In this connection Zajonc writes about two different forms of unconscious processes: "One emerges where behavior, such as that occurring in discrimination among stimuli, is entirely under the influence of affective factors without the participation of cognitive processes" (p. 172). In this he includes perceptual defense and subliminal perceptions. The other form of unconscious process "is implicated in highly overlearned, and thus automatized, sequences of information processing; this form includes cognitive acts but has collapsed them into large molar chunks that may conceal their original component links" (p. 172). Zajonc assumes that the former type of unconscious process involves no cognitive activity (as in Freud's "primary-process" thinking); the latter is a primitive, automatized process without significant cognitive activity or reality testing. I would certainly agree that a person need not be aware of his or her cognitive appraisals and may utilize primitive logic, but I would argue against the idea that some appraisals (Zajonc refers to preferences) are non-cognitive.

Some Further Issues About How Emotion Is Generated

There are a number of phylogenetic and ontogenetic implications of this cognitive emphasis. For

example, those who are less sanguine than I about the causal role of cognition in emotion often point to the startle response, since cognition is obviously absent or negligible in this reaction. I do not consider startle an emotion. Emotion results from an evaluative perception of a relationship (actual, imagined, or anticipated) between a person (or animal) and the environment. Startle is best regarded as a primitive neural reflex process. It signals that something has happened, and although it could precipitate a "true" emotional response, it is in itself merely a physiological response to an unanticipated change in stimulation, perhaps analogous to an eye blink in response to a sudden burst of light.

On the other hand, I am also convinced that some emotions depend more on cognitive activity, particularly of the symbolic sort, than others. For example, cognitive activity is apt to be more modest with respect to symbolic representation in fright than in anxiety. As Averill and I (Lazarus & Averill, 1972) have argued, anxiety always involves symbolic threats (probably to the self), is anticipatory, and occurs under conditions of ambiguity, whereas fright is immediate, concrete, and concerns survival-related dangers.

From this standpoint, then, in comparatively simple creatures there should be little symbolic representation in the appraisal process, although no living creature could survive unless it were able to distinguish harmful from nonharmful events. Perhaps the concept of releaser (i.e., a physical pattern that matches a neural engram and sets off an emotional escape or attack reaction) is now considered simplistic. However, the basic idea seems sound that in more primitive creatures there is greater dependence on rigid, built-in processes, whereas in higher creatures such as humans there is much more variability and dependence on learning and symbolic processes.

Probably all mammals meet the minimal cognitive requirements of emotion if one permits the concept of appraisal to include the type of process described by ethologists in which a fairly rigid, built-in response to stimulus arrays differentiates danger from no-danger. An evaluative perception, hence appraisal, can operate at all levels of complexity, from the most primitive and inborn to the most symbolic and experience-based. If this is reasonable, then it is also possible to say that cognitive appraisal is *always* involved in emotion, even in creatures phylogenetically far more primitive than humans.

A corollary of the above is that the child's capacity to experience particular emotional reactions

depends on the development of an understanding of the social context and its significance. Complex and more symbolically based emotional reactions, such as indignation and guilt, probably emerge later in ontogenesis than more simple types of emotion such as anger and fear, although even anger and fear in humans can have highly complex and symbolic social and psychological determinants. The capacity for emotional richness seems similar in the very young child and the more primitive mammal. However, the capacities diverge as the human child acquires symbolic modes of thought and knowledge; the child's cognitive processes and social circumstances extend its capacity for emotional richness far beyond that of other mammals. By implication, particular emotions will enter into the child's repertoire only after the child has come to master their particular cognitive prerequisites.

From a cognitive perspective, we can also ask whether it is possible to speak meaningfully about universals in the generation of an emotional state. Across species the basic neurochemical makeup of animals is quite similar, especially if we take as our starting point MacLean's (1949, 1975) reptilian and mammalian brain, two of three systems of the "triune" brain that also includes the human cerebral cortex. These similarities provide a neural template that makes emotion in all species similar in some fundamental ways.

Of even greater interest to those who emphasize a social and cognitive perspective are the similarities and variations within the human species in the processes underlying the elicitation of an emotion. Here too, although people share some biological and social agendas, social and personal meanings vary and take on great importance. As Hochschild (1979) points out, every society has "feeling rules"—prescriptions and proscriptions about how people should feel and act in diverse social contexts. The society, then, provides a kind of template (see also Kemper, 1978) of human relationships and meanings on which the appraisal of the significance of an encounter for one's well-being depends. These shape not only impression management but how we actually feel. Further, within a species and within a society, commitment patterns and beliefs vary from individual to individual and group to group. Therefore, whatever their origins, there are both common and distinct agendas that shape appraisals of the significance of a particular transaction with the environment for the well-being of any given individual.

If, as I do, one regards emotion as a result of an anticipated, experienced, or imagined outcome of

an adaptationally relevant transaction between organism and environment, cognitive processes are always crucial in the elicitation of an emotion. This idea has long been resisted by those disciplines most concerned with emotion as a feature of biological adaptation, perhaps because the concept of appraisal appears to emphasize individual differences and thereby requires complex, even individualized, rules about the determinants of appraisal. However, the search for such rules about how emotion is shaped by cognition in no way threatens the basic premises of the evolutionary-adaptational perspective that has long dominated the biological and social sciences. There is nothing in this perspective that requires reduction of all emotion to the lowest common denominator of comparatively simple animals and reptilian or mammalian brain structures. When such reduction occurs, it is at the expense of recognizing and investigating the primary role of cognition in emotion. It is about time we began to formulate rules about how cognitive processes generate, influence, and shape the emotional response in every species that reacts with emotion, in every social group sharing values, commitments, and beliefs, and in every individual member of the human species.

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