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Comment

On Emotion: The Chicken-and-Egg Problem Revisited

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The ongoing debate between Lazarus (1984) and Zajonc (1984) is reminiscent of the controversy that resulted when William James presented his new "theory" of emotion exactly 100 years ago. James assumed that the traditional description of the sequence of events that occurs during an emotional experience was wrong. Rather then accept the sequence Perception-Feeling-Bodily Changes-Action, he assumed that the bodily changes preceded the feeling state. At no time did he question the idea that a perception was the starting point. This chicken-and-egg problem posed by William James has never been fully resolved, but the problem itself has gradually slipped into oblivion.

The current debate appears to be whether perception (*cognition,* in modern terms) comes before feeling (*affect,* now). Unfortunately, there is no more reason to suspect that this issue will be more easily resolved in the next hundred years than the Jamesian controversy was resolved in the past hundred. The reason for this statement is that, fundamentally, the problem is not an empirical one but is primarily a matter of definition. And, as is well known, definitional issues are usually resolved by fiat, or by debating skills, or by marshaling evidence for utility.

It is worth noting that neither Zajonc nor Lazarus has defined in explicit terms the two concepts they are most concerned with—namely, affect and cognition. The comment by Zajonc (1980) that cognition requires some type of transformation of a present or past sensory input is not explicit; it allows both subjective experience and hypothetical activation of brain processes to be included as part of cognition. Examination of the relevant literature reveals that both of these terms have a long history of ambiguity concerning their meanings. In my book (Plutchik, 1980) I list 28 definitions of the word *emotion* alone. The term *affect* has been most consistently used by Freud and other psychoanalysts to mean a sometimes conscious and sometimes unconscious (inferred) emotional state. The word *cognition* has an equally long

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history of use and has been most often defined to include, at a minimum, perception, attention, short-term memory, long-term memory, schemata, and the inferred mental processes that connect all these functions.

In the context of the current debate, both Zajonc and Lazarus appear to be using the terms *affect* and *cognition* to mean the verbal reports a human adult gives to indicate that he or she is conscious of feeling something or conscious of thinking about something. Such a narrow definition is inadequate for the following reasons (among many): (a) An observer may erroneously assume that no emotion or cognition exists because none has been reported. (b) Emotions and cognitions are generally believed to occur in infants and lower animals as well as adult humans. The evidence for these beliefs must therefore be different from verbal reports of conscious feelings.

All important psychological concepts (such as memory, drive, affect, cognition, motivation, and learning) represent abstract theoretical terms, or hypothetical constructs, whose properties can only be inferred from indirect evidence (Plutchik, 1983b). The ethologists and comparative psychologists have taught us how to make inferences about such concepts in lower organisms and, by implication, in humans as well. Such inferences depend on knowing something about the stimulus, the details of an animal's behavior both before and after the onset of the stimulus, the consequences of the behavior, the animal's typical past behavior, and how others react to the behavior (Hebb, 1972). It appears evident that both affects and cognitions are more complex events than is reflected by subjective experiences alone.

The positions presented by Zajonc and Lazarus appear to be asymmetric. Lazarus argues that *all* affects require a prior cognition, or interpretation of a stimulus. Zajonc appears to be saying that although cognitions are often or usually the precursors to affects, there are *some* situations where they cannot be identified, and where the affect is a direct (unmediated) response to a stimulus.

These differing interpretations can perhaps be integrated by the formulation of emotion that I have proposed. On the basis of various lines of evidence, I have suggested that an emotion should be defined as a *chain* of events that has certain loosely coupled elements in a complex feedback-loop system. The chain contains the elements of cognition, arousal, feeling state, preparation for action, display behavior, and overt action. The cognitive link in the chain contains elements of attention, memory, and reasoning. And the whole complex process begins with a significant stimulus in the life of the individual. The emotion chain has the effect of interacting with that stimulus in order to produce some degree of behavioral homeostasis (Plutchik, 1977, 1983a).

In a circular feedback-loop system there is usually an event that stimulates the activation of the system. As Lazarus suggests, this event is usually a transaction between the individual and the environment that involves a cog-

nitive evaluation about central life agendas related to survival. However, in any circular feedback system, one can intervene at any point to influence the system. One can put an electrode into the brain of a cat, or of a human being, and produce emotional reactions without a cognitive evaluation of an external event, and even without arousal. In such unusual cases, cognitive events are not primary, but such cases rarely occur in the course of life. They do not reveal much about the role of emotion in life, just as the startle response does not reveal much about emotions in general. Preferences may be related to emotions, just as personality traits are related to emotions, but they are not emotions. When emotions are conceptualized as complex chains of events with feedback loops, it is obviously possible to focus attention on any of the elements of the chain. One can then produce theories that emphasize, for example, the primacy of arousal, or the primacy of expressive behavior.

It is also important to note that both emotions and cognitions have developmental histories and can exist in more primitive forms. An infant who shows evidence of fear (crying, withdrawal) when exposed to a visual cliff or to a stranger is clearly revealing cognitive processes as indicated by some degree of perceptual discrimination between one stimulus and another. Fear of strangers in a 7-month-old baby certainly requires enough memory (a cognitive function) to distinguish the unfamiliar stranger from the familiar parent. Piaget has shown that cognitions have a developmental course, and Cicchetti and Hesse (1983) have described the emotional correlates of cognitive development.

I believe that the current debate on the issue of primacy, like the Jamesian one before it, is not a fruitful one. It is based on a narrow conceptualization of the theoretical terms *affect* and *cognitions* as subjective experiences. The controversy disappears if emotions are conceptualized as complex chains of inferred events with feedback loops that usually begin with an external stimulus and an evaluation of that stimulus. Under certain relatively rare circumstances, it is possible to intervene at different points of the chain to produce reactions without cognitions. In this sense, both Zajonc and Lazarus are correct, but the model described by Lazarus is by far the more typical situation. Rather than pursue this chicken-and-egg problem, I hope that our energies can instead be devoted to studying and elucidating the many other significant questions that are of fundamental concern to us all.

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