
Authors' response

The social process theory of emotion: A radical contextualist perspective

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In her commentary on our paper, Lois Bloom (1992) claims that the dynamic systems perspective is neither innovative nor explanatory, and that it does not offer any new solutions to the difficult problems of research in the area of emotional development. We believe that Bloom's commentary raises a number of issues that directly address the potential use and acceptance of a dynamic systems perspective in developmental psychology and our response will focus on those issues.

What is the theory in our paper?

The dynamic systems perspective is not a theory. We agree with Bloom's points that the system's perspective is basically content-free and descriptive of the macroscopic features of process (see Thelen & Ulrich (1991) for an extensive discussion of the limitations and uses of a systems perspective in developmental psychology). Our *social process theory* of emotion partakes of a dynamic systems perspective, but this is only one aspect of our proposed theoretical analysis. The social process theory includes additional principles that ground the concepts in the world of emotional phenomena: principles such as the malleability of the developing emotion system and the concept of non-linear self-organizing developmental transitions, principles that allow one to detect emotionally relevant processes in the social context, principles related to understanding emotional blends, and principles related to the nature of emotional information – gradient vs. categorical – that individuals perceive and construct. A systems perspective, by itself, says nothing about these specific processes.

Is dynamic systems thinking innovative?

We think the dynamic systems perspective offers an innovative way to think about emotions. Bloom suggests that the only support we cite for a systems theory is the demonstrations of contingent sequences and that systems theory is nothing

more than what is already found in organismic and contextual world views. Indeed, she is correct in equating the systems perspective with a "world view." That is precisely how we use it, as an organizing metaphor for thinking about emotion. There are two crucial aspects of our view that Bloom has not mentioned, however.

First, dynamic systems thinking offers concrete ideas about the nature of self-organizing systems that go far beyond its predecessors in the area of systems analysis. Dynamic systems form patterns through a process referred to as *dynamic stability*. The point is that the pattern is not held together by a higher order organizer or central executive, but rather by the cooperative activity of the elements. Dynamic systems thinking suggests that the processes that induce behavioral and developmental change in the system are also self-organizing, conceptually no different from those that create stability. These processes create *non-linear transitions* between stable patterns and this concept offers a fundamentally new way of thinking about why actions tend to cluster into discrete-like states or patterns. This perspective is fundamentally new because it does not rely on a neurological pattern generator but instead allows the central nervous system to be among the participating and changing members of the developing system (Fogel & Thelen, 1987; Kugler, Kelso & Turvey, 1982; Thelen, 1989; Thelen & Fogel, 1989; Thelen & Ulrich, 1991).

Second, embodied in a dynamic systems perspective is a radical contextualist world view in which the system under study is reducible only to its constituent relationships and the components of a system cannot be defined independent of those relationships. The alternative is the Platonic notion that things have an objective and independent reality, that objects may be influenced by their context, but those objects retain individual essences that can be described without reference to their context.

Bloom seems to suggest, for example, that emotion, cognition, and social interaction are objectively separate and specifiable "domains." She remarks that "smiles are social actions while object play is generally not." This seems to imply that psychological phenomena, including internal representations, have essences independent of the contexts in which they occur and in which they are constituted. There are many forms of object play that are both "emotional" and "social" such as peek-a-boo with a cloth cover and fantasy play with objects. Bloom prefers a theory in which the emotions and the representations are "in" the individual, while the expressions and sequences are the "surface manifestation of the process within the organism and its relationship to the social context."

Is research generated by a dynamic system's perspective anything more than descriptive?

It is not surprising, therefore, that Bloom sees our research examples as superficial and our theory as non-explanatory. She sees the sequences and asks, "by what process?" She means, by what *internal* (invariant) process can these "surface manifestations" be explained? Our research is mere description if one believes that emotion is an objectively defined internal entity. Our entire paper is meant specifically to counter this view, which we argue at the beginning of the paper is held implicitly by most current emotion researchers.

We believe that the motor patterns of action are not mere "expressions" of some internal program, organizer or resource. Rather, we offer examples of how the action at the periphery of the body is fundamentally and inextricably a part of the emotional process. Emotions do not exist objectively anywhere. They are, we argue, inherently relational, emergent from the coming together of a brain, a body that moves and senses, and an environment. None of these components is the emotion. None of these components makes any sense without the others and none could operate in an exclusive realm unto itself. We recognize that some may find this radical contextual perspective uncomfortable because it is relational. A process is not a "thing" and does not implicate any single component as more primary or central than any other.

Are there alternatives to a resource model?

We find Bloom's data extremely interesting, and her work consistent with our call for a more context-specific and sequential view of emotions. The problem, from a social process theoretical perspective, is her explanation of the results by means of an internal, distributed resource model. This model implies the existence of a fixed quantity of emotional energy that is distributed among different sub-systems. For this model to be a theory, one would have to define the resource quantity, the types of sub-systems to which the resource is most likely to be allocated and why, and perhaps some transformation rules by which the resource is allowed to become invested in different actions like object manipulation, smiling and social communication.

We suggest that this exercise in theory building would only further reify the notion of resource and create the need for an executive program to allocate and transform the resource, leading us back to the ghost in the machine that our theory seeks to eliminate. Instead, we would encourage Bloom to consider some alternative explanations of her data, explanations that are more consistent with our social process theory of emotion.

We argue that the unit of analysis is not the particular actions on objects, nor the smiles, nor the actions of the partners: these units lead Bloom into a search for objectively specifiable domains. Rather, the unit of analysis is a process unit, the pattern of gaze, facial expression, and action that occurs when infants are presented with two objects to put together in a social situation.

Our prediction is that the patterning of attention and action emerges from the nature of the task. Thus, one possible explanation is that task difficulty may preclude smiling – not because the task is non-social, in the "object domain," or because there are limited emotional resources – but because the infant is required to gaze more at what is being done. Smiling, especially Duchenne smiling, raises the cheeks and may constrict vision. Any facial expression other than relaxed with open eyes may not be conducive to a difficult task. Facial expression and gaze are not the only components in this system, but one may begin to see how they constitute each other in the process of engaging with the task.

The research problem, then, is to examine how the task, the skill, and the infant's purpose self-organize into this particular emotional process. Our research strategy would be to alter the nature of the task experimentally (task parameters), to present the task when the infant has a different motivation other than to explore

(goal or motivational parameters), to select and compare infants that vary in their skill at putting objects together (skill parameters), and present the toy in different social contexts such as when the partner demands involvement or is merely watching (social contextual parameters).

Our prediction would be that different emotional processes would emerge for most of these variations and each of their multiple combinations. If the task is made difficult, for example, by having objects that are not graspable or that do not exactly fit together, the likely result will be anger or distress, and depending on the social contextual parameters, that anger or distress could be communicated to others. We would encourage this type of research because it has not been done systematically, will certainly lead to the construction of better process models, and would provide much needed alternative research strategies compared to that derived from a non-contextual resource model.

In sum, we believe that our paper makes an important contribution to the theory of emotion and its development. It challenges students of emotional development to think clearly about their metatheoretical assumptions and how their research is connected to those assumptions. If one reads the paper from the contextual perspective we seek to articulate, we think the reader will find many insights about emotional process and a variety of concrete, executable research ideas. We offer the framework of a theory that awaits the acquisition of particular types of process data and the development of process models that preserve the contextual world view at each level of conceptualization.

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