

Social Situations Shape Social Emotions That Benefit Genes

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This article by two distinguished emotions researchers proposes “Social Function Theory” as “a next chapter in emotion science.” It hopes to transcend a perceived individualist slant of Paul Ekman’s six basic emotions theory (Ekman 1992), and a perceived excess reliance on two dimensions in Lisa Feldman Barrett’s constructivist position (Barrett 2017) by positing “upwards of 20 discrete emotions” for social situations that co-evolve with cultures. Ekman’s six basic emotions are emphasized to the neglect of scores of other attempts to define alternative sets of basic emotions; the deficit of social emotions is understandable given his aim of documenting universal emotions. Lisa Feldman Barrett’s constructivist view is presented as if two dimensions are at its core, but it seems to me that she acknowledges the evolutionary origins of capacities for responses even as she emphasizes variations in how they are categorized, described, and experienced (Barrett 2013).

Attempting to synthesize and transcend these approaches by including more social emotions and more emphasis on cultural variation is worthwhile, but a more radical reframing is required or the effort will likely be merely another attempt to mediate a truce in the “hundred years war” between those who view emotions as natural kinds and those who view them as socially constructed (Lindquist et al. 2013). To reach its full potential, Social Function Theory needs to step away from those old battles and build on an evolutionary foundation of how natural selection shaped social emotions, and how genes that give rise to social emotions increase the fitness of individuals (Nesse 1990). This evolutionary perspective explains why social emotions are somewhat consistent, but neither distinctly separate nor natural kinds. It also is

congruent with recognition that varying emotion categories are constructed from observations of organic systems that are fundamentally different from designed systems.

Tacit Creationism and Discrete Emotions

The tacit creationism that pervades all of biology is at the root of the problem (Nesse 2020). Bodies and minds are often viewed as if they were products of design, with distinct parts that have specific functions and sensible connections to accomplish a defined goal. For instance, specific functions are often attributed to neurotransmitters like serotonin and brain loci such as the amygdala, but they have overlapping boundaries and multiple functions. Emotions are similarly often viewed as if they are discrete modules designed to serve specific functions, but they are organically complex products of natural selection whose structures and functions are hard to describe.

Different emotions were shaped not to serve different functions, but to meet the fitness challenges in different situations that have recurred over the evolutionary history of the species (Nesse 1990). Because the situations are not entirely separate and because the response patterns that maximize fitness vary, emotions are not fully distinct from one another. Instead, they are suites of responses with fuzzy boundaries and substantial overlap that are expressed by mechanisms that vary between individuals as well as cultures. A genuinely evolutionary view is the antithesis of an essentialized view of emotions. The repeated reference to “distinct emotions” in the target article gives the impression that the authors view emotions as sharply bounded designed modules, but their writings elsewhere

about “high dimensional and often blended” emotion categories make it clear that they are not entirely in thrall to tacit creationism (Cowen and Keltner 2021).

Recognition that categories of emotions are constructed (Barrett 2013) is also an antidote to tacit creationism, one that is fully congruent with an evolutionary view. We recognize somewhat consistent patterns of responses to certain situations and give them names. Anger, disgust, fear, happiness, sadness, and surprise are moderately consistent responses that are aroused by six somewhat specific situations, but even those do not have sharp boundaries. Other situations are far less specific, especially those that arise in social life. While the mental machinery presumably is fairly consistent, the prevalence and experience of different emotions varies considerably across individuals and cultures, as do attempts to describe them. It is impressive that empirical lexical and neuroscience methods can identify and map 27 emotions onto a multidimensional “semantic space” (Cowen and Keltner 2021). What is missing is an evolutionary analysis of what those emotions are, and how they came to exist.

Many of the 27 emotions can be mapped straightforwardly to a relevant situation. Jealousy is useful in situations involving the potential loss of a mate. Guilt is useful after violating a moral precept. Submission is useful after defeat in a status conflict. The situations in which emotions such as envy, sympathy, triumph, and entrancement give benefits are less obvious, but are in need of investigation. It will also be useful to work from the other direction, starting from situations. The loss of a close loved one arouses grief, an emotion that does not appear on their list. Being excluded from a social group arouses a complex emotional state that may deserve a name. Identifying the full range of social emotions will require considering the many kinds of situations that arise during social life.

Social Emotions

Social Function Theory should not be satisfied with identifying social emotions and recognizing that they have functions. The larger task is to map each social emotion to the situations that shaped it, and to understand how the emotion gives a selective advantage. This requires using what we have learned in recent decades about how natural selection shaped capacities for social behavior. The authors describe “a shift from a focus on the selfish gene as the unit of analysis to the focus on dyads, groups, and cultures” in recent decades. They go on to suggest that “human emotions have a central function of enabling cooperation” and facilitating social coordination. This gives the impression that they think that social emotions evolve because of the benefits they bring to dyads or groups. However, genes that benefit groups are soon selected out if they decrease the fitness of individuals. The real recent progress in understanding the origins of prosocial emotions has come from recognizing how they give advantages to individuals and their genes, with committed relationships and cooperative groups being wonderful emergent phenomena.

Prosocial emotions exist because individuals with prosocial tendencies get selective advantages compared to those who lack such tendencies. This seemed like a mystery to those who assumed that selfish genes necessarily give rise to selfish behaviors, but it is increasingly clear that genes that induce prosocial behavior can give advantages in several ways.

The benefits of effectively managing the reciprocal exchange of favors are substantial, with studies of the Prisoner’s Dilemma generating hundreds of studies. If the situations it generates have recurred often with fitness implications over evolutionary history, then each one should have a recognizable corresponding emotion. Indeed, they do (see Table 1). However, I am now embarrassed that my thinking in 1990 was so restricted. Models of reciprocal exchange are grossly simplistic portrayals even of instrumental human

TABLE 1. Emotions that mediate reciprocity relationships (Nesse 1990, 275)

You	Other	Before	After
Cooperate	Cooperate	<i>Trust</i>	<i>Gratitude</i>
	Defect	<i>Suspicion</i>	<i>Anger</i>
Defect	Cooperate	<i>Anxiety</i>	<i>Guilt</i>
	Defect	<i>Disgust</i>	<i>Rejection</i>

relationships. The communal and kin relationships we care more about are based on commitment and caring. Efforts to understand guilt, shame, and embarrassment have been particularly productive, and progress in mapping such emotions to complex social situations is developing well (Ketelaar 2015), but much remains to be done to understand the evolution of capacities for social emotions.

Integration with appraisal theory offers a fine opportunity (Moors et al. 2013). Appraisal dimensions describe the characteristics of situations that are salient for individual decision making and emotion arousal. Valence is obvious, but the novelty of the situation, and the individual's agency and control over it also have major influence on what emotions will be useful in the situation. I remain uncertain about the ontological status of appraisal dimensions, but they are certainly essential to understanding emotions.

Social selection is especially important for explaining prosocial traits that can be as costly

as a peacock's tail. Individuals who are preferred as social partners get superior partners and associated advantages. Self-interested choices of the best possible social partners create strong selection for traits that make individuals preferred as partners, traits like generosity, honesty, loyalty, and empathy (Nesse 2007).

Closely related tendencies that enforce cooperation were once viewed as costly traits that could only be explained by selection at higher levels, but studies of cooperation among bacteria have discovered that the costs of enforcement are more than outweighed by benefits to gene transmission (Ågren, Davies, and Foster 2019).

Once culture emerged, it created new niches and new selection forces. Cultural group selection helps to explain the success of groups whose members enforce norms for cooperation, resulting in selection for following such norms (Richerson et al. 2015). In hierarchical groups, dominant individuals often impose sanctions that benefit themselves and the group, again creating selection forces that shape prosocial emotions.

All these marvelous complexities create new situations and new selection forces that shape a wide variety of only somewhat distinct social emotions. The search for their origins and how they have given selective advantages will not only be exciting but will also provide essential knowledge for those trying to find ways to create better relationships and more cooperative groups.

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