



## How Many Emotions Are There? Wedding the Social and the Autonomic Components

Theodore D. Kemper

*The American Journal of Sociology*, Vol. 93, No. 2. (Sep., 1987), pp. 263-289.

Stable URL:

<http://links.jstor.org/sici?sici=0002-9602%28198709%2993%3A2%3C263%3AHMEATW%3E2.0.CO%3B2-4>

*The American Journal of Sociology* is currently published by The University of Chicago Press.

---

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/ucpress.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

---

JSTOR is an independent not-for-profit organization dedicated to and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

# How Many Emotions Are There? Wedding the Social and the Autonomic Components<sup>1</sup>

Theodore D. Kemper  
*St. John's University*

Fundamental in the field of emotions is the question of how many emotions there are or there can be. The answer proposed here is that the number of possible emotions is limitless. As long as society differentiates new social situations, labels them, and socializes individuals to experience them, new emotions will continue to emerge. But this view must be qualified by an understanding of the autonomic constraints that limit variability in the experience of emotions. It is argued here that there are four physiologically grounded primary emotions: fear, anger, depression, and satisfaction. They are evolutionarily important, cross-culturally universal, ontogenetically early to emerge, and link empirically with important outcomes of social relations. Secondary emotions, such as guilt, shame, pride, gratitude, love, nostalgia, ennui, and so forth, are acquired through socializing agents who define and label such emotions while the individual is experiencing the autonomic reactions of one of the "primaries." Hence, it is argued here, guilt is a socialized response to arousal of the physiological conditions of fear; shame to those of anger; pride to those of satisfaction; and so on. This integration of primary with secondary emotions incorporates the contributions of both positivist and social constructionist positions in the sociology of emotions.

There is broad agreement among diverse investigators that emotions are, ideal-typically, autonomic-motoric-cognitive states. How many such states are there, or can there be? I essay an answer here in terms of two elements: (1) the number of underlying autonomic possibilities and (2) the number of culturally available social differentiations that can be linked to them. The latter makes possible a very large number of emotions and

<sup>1</sup> An earlier version of this paper was presented at the meetings of the American Sociological Association, Washington, D.C., 1985. I wish to thank the following persons who read and provided helpful comments on an early draft: James R. Averill, Paul Ekman, Steve Gordon, Arlie R. Hochschild, Carroll Izard, Richard Lazarus, Carol Z. Malatesta, Thomas Scheff, Phillip Shaver, Peggy Thoits, and Silvan S. Tomkins. Requests for reprints should be sent to Theodore D. Kemper, Department of Sociology, St. John's University, Jamaica, New York 11439.

supports a social constructionist view of emotions, as elaborated by Shott (1979), Hochschild (1979), Gordon (1981), or Averill (1980, p. 326), who says: "From a constructivist [*sic*] point of view, there are an indefinite number of emotions. That is, societies can shape, mold, or construct as many different emotions as are functional within the social system."

But, I will argue here, emotions are not quite as free to form as Averill goes on to suggest. In order for there to be an emotion, as we commonly understand it, there must be some *autonomic* component. Otherwise, we have only sensation or cognition. Hence, the construction of emotions is constrained by the number of autonomic options. These will limit the degrees of freedom in emotion formation, which supports a positivist view in the sociology of emotions, as I have set forth (Kemper 1978, 1981).

In this paper, I deal most immediately with the question of the number of emotions but intend also to moderate a dispute that plagues efforts to formulate a coherent sociological approach to the study of emotions. As Averill's statement suggests, the question of how many emotions there are implicates sociological concerns directly. Although sociologists are not the main practitioners in the field of emotions, they are important in the effort to develop a comprehensive theory and have contributed to an understanding of social relational and social structural conditions that are prime instigators of emotions (Kemper 1978; Collins 1975, 1984); cultural and microsociological factors in the socialization of emotions (Gordon 1981), particularly the learning of emotional cues and display rules (Hochschild 1979, 1983; Thoits 1984); normative and structural conditions in the management of emotions (Hochschild 1979, 1983; Gordon 1981; Thoits 1984); and social determinants of differential expression of emotions, as, for example, between men and women (Balswick and Averitt 1977; Hochschild 1983). Ultimately, all these elements must enter into a comprehensive theory.

Meanwhile, sociologists have split into two main camps in this domain. Either they take a positivist position, essentially undergirded by biological data (e.g., Kemper 1978, 1981, 1984; Barchas 1976; Mazur and Robertson 1972; Rossi 1984; Mazur 1985), or they assume a social constructionist approach, in which biological aspects of emotion are either minimized or ignored (e.g., Shott 1979; Hochschild 1979; Gordon 1981; Hunsaker 1983; Stryker and Statham 1985).

A syncretic solution to the problem of the number of possible emotions is proposed here. It amalgamates important elements of both positivist and social constructionist approaches, giving each its due in providing a coherent solution to a long-standing problem in the study of emotions.

First, I review a number of current approaches to the question of how many emotions there are. A major issue is whether or not some emotions

are “primary,” or more “fundamental,” than others. If there are primary emotions, some or all of them may be innate (hence, with a biological provenance). If there are no primary emotions, then all emotions may be socially constructed.

Second, I present arguments for a set of four primary emotions: fear, anger, depression, and satisfaction. Compared with several other proposals concerning primary emotions, this is a very conservative solution to the problem. The bases for this formulation are fivefold: evolutionary, ontogenetic, cross-cultural, physiological, and social relational.

Finally, I suggest how additional emotions are socially constructed, essentially grafted onto the primary emotions through socialization. This will demonstrate the unique, complementary, and necessary contributions of both autonomic and social components to the development of emotions that go beyond the rudimentary and make emotional life of any complexity possible.

Before proceeding, I must address a critical point of nomenclature. Emotion labels are not standardized, and different investigators may use different terms for the same emotion, for example, satisfaction, or contentment, or happiness. Also, different terms may reflect different levels of intensity of the same emotion, for example, depression is a more intense variant of sadness. The reader is asked to accommodate to such variation in terms and to recognize which different emotion labels are equivalent to fear, anger, depression, and satisfaction, the terms used here.

#### CURRENT APPROACHES TO PRIMARY EMOTIONS

Cataloging the emotions is a long-standing interest in scholarship, beginning with Plato (see Cleve 1969; Gardiner, Metcalf, and Beebe-Center [1937] 1970), and there are many answers to the question of either the total number of emotions or the number of fundamental or primary emotions. Table 1 contains illustrations of seven current approaches.

Evolutionary analyses view emotions as adaptive for species survival (Hamburg 1963; Plutchik 1962; Scott 1980). Frequently, an adaptive need is postulated to explain the presence of a specific emotion. This is redolent of similar designations of societal “needs” to explain existing social practices in early functionalist sociology (Aberle et al. 1950).

Proponents of neural approaches infer the primary emotions from putative properties of neural circuits (Tomkins 1962, 1963, 1982; Stanley-Jones 1970; Izard 1972, 1977) and associated endocrine effects in the brain (Panksepp 1982).

Psychoanalytic approaches to emotions (Arieti 1970; Brenner 1980) rely to greater or lesser extent on concepts elaborated by Freud: Eros,

TABLE 1

## PRIMARY EMOTIONS PROPOSED IN RECENT THEORIES

Theory	Emotions
Evolutionary approaches:	
Plutchik (1962, 1980) . . . . .	fear, anger, sadness, joy, acceptance, disgust, anticipation, astonishment
Scott (1980) . . . . .	fear, anger, loneliness, pleasure, love, anxiety, curiosity
Epstein (1984) . . . . .	fear, anger, sadness, joy, love
Neural approaches	
Tomkins (1962, 1963) . . . . .	fear, anger, enjoyment, interest, disgust, surprise, shame, contempt, distress
Izard (1972, 1977) . . . . .	fear, anger, enjoyment, interest, disgust, surprise, shame/shyness, contempt, distress, guilt
Panksepp (1982) . . . . .	fear, rage, panic,* expectancy†
Psychoanalytic approaches:	
Arieti (1970) . . . . .	fear, rage, satisfaction, tension, appetite
Brenner (1980) . . . . .	pleasure, unpleasure
Autonomic approach:	
Fromme and O'Brien (1982) . . . . .	fear, anger, grief/resignation, joy, elation, satisfaction, shock
Facial expressions approaches:	
Ekman (1973) . . . . .	fear, anger, sadness, happiness, disgust, surprise
Osgood (1966) . . . . .	fear, anger, anxiety-sorrow, joy, quiet pleasure, interest/expectancy, amazement, boredom, disgust
Empirical classification approaches:	
Shaver and Schwartz (1984) . . . . .	fear, anger, sadness, happiness, love
Fehr and Russell (1985) . . . . .	fear, anger, sadness, happiness, love
Developmental approaches:	
Sroufe (1979) . . . . .	fear, anger, pleasure
Trevarthen (1984) . . . . .	fear, anger, sadness, happiness
Malatesta and Haviland (1982) . . . . .	fear, anger, sadness, joy, interest, browflash, pain, knitbrow
Emde (1980) . . . . .	fear, anger, sadness, joy, interest, surprise, distress, shame, shyness, disgust, guilt

\* Panic is associated with "sorrow, loneliness, and grief" (Panksepp 1982, p. 410).

† Expectancy is understood as "joyful anticipation" (Panksepp 1982, p. 414).

Thanatos, libido, rage, and anxiety, although a more eclectic stance has also developed, allowing for developmental differentiation of emotions (Arieti 1970).

Autonomic approaches to emotions are based on the activation by the peripheral nervous system of various bodily organs—for example, heart, lungs, skin, and digestive system—in the course of emotions and match emotions to specific processes of these organs (Funkenstein 1955; Stanley-Jones 1970; Fromme and O'Brien 1982).

Darwin ([1872] 1965) inaugurated the tradition of studying emotions through facial expressions, and, in recent years, this has become one of the most widespread modes of research on diverse populations, both developmentally and cross-culturally (Frijda 1970; Ekman 1973; Malatesta and Haviland 1982).

Empirical classification work seeks to discover, mainly from verbal reports, how people conceive of emotions (Lutz 1982; Shaver and Schwartz 1984; Fehr and Russell 1984). Findings are usually presented in the form of factor-analytic, cluster, or multidimensional scaling results.

Finally, developmental approaches, with work heavily concentrated on infancy and early childhood, seek to understand primary emotions through theoretical and empirical analyses of ontogenetic timetables (Sroufe 1979; Emde 1980).

Given this plethora of approaches to primary emotions, Epstein's (1984) definition is a useful one: A primary emotion is "a complex, organized response disposition to engage in certain classes of biologically adaptive behaviors . . . characterized by a distinctive state of physiological arousal, a distinctive feeling, or affective, state, a distinctive state of receptivity to stimulation, and a distinctive pattern of expressive reactions" (p. 67).

In each of the seven approaches shown in table 1, one or more aspects of Epstein's definition are of central significance: biological adaptivity in the evolutionary, psychoanalytic, and developmental approaches; distinctive physiological arousal in the neural and autonomic approaches; distinctive feeling or affective state in the empirical classification approach; distinctive receptivity in the neural, autonomic, and developmental approaches; and a distinctive pattern of expressive reactions in the neural and facial expressions approaches.

There is little agreement on what underlying elements ought to constitute primary emotions, which gives this aspect of the field of study a theoretical vagueness that is troubling. Indeed, under the circumstances, some (e.g., Averill 1980; Gordon 1981) reject the idea of primary emotions altogether.

In light of this analytic disorder, it is all the more reassuring that,

regardless of approach, there is virtual agreement on a small set of primary emotions: fear, anger, depression, and satisfaction. Although this high degree of consensus may imply only a new definition of the common sociological term "pluralistic ignorance" (Allport 1924), it is equally likely to be the result of what is understood in psychoanalytic theory as "over-determination." That is, numerous factors contribute to the centrality or primacy of these four emotions and, therefore, to the theoretical convergence on them from so many different perspectives.

Even if emotions theorists agree on fear, anger, depression, and satisfaction as primary, theoretical chaos ensues with respect to additional emotions. For some investigators (e.g., Plutchik 1962, 1980; Tomkins 1962, 1963; Izard 1977), a large complement of additional emotions are also "primaries," while for others (e.g., Arieti 1970; Sroufe 1979; Epstein 1984), additional emotions are for the most part not primary but, rather, dependent on differentiation of one or more of the primaries into new emotions, or they require specific developmental and socialization contingencies, such as acquisition of a sense of self (Lewis and Rosenblum 1978).

Although the issue has been joined among psychologists (see Izard and Buechler [1979] for summaries of the arguments on both sides), a distinctively sociological approach to the question of primary and secondary emotions is offered here. This approach integrates biologically based and social constructionist sociological perspectives on emotions and extends the reach of sociological analysis in the domain of fundamental questions about emotions.

## PRIMARY EMOTIONS

I propose that the primary emotions are fear, anger, depression, and satisfaction. This position rests on a number of grounds that, taken together, organize the known materials, integrating social and biological contributions in a coherent way that is heuristic for both theory and research about the number of primary emotions.

### Evolutionary Value

Darwin (1965), Hamburg (1963), Plutchik (1962, 1980), and Lazarus and Averill (1972) have pointed out that emotions have evolutionary survival value. A case can be made that some emotions are more valuable in this respect than others. Fear and anger energize the organism to undertake

urgent activity for survival purposes when faced with danger or with threat from others. Satisfaction not only allows the organism to rest and to recrudescence, it also reinforces striving after important survival goals. There seem to be no disagreements about the adaptive value of these first three emotions (Plutchik 1980; Epstein 1984).

Depression may seem to be more difficult to explain in evolutionary terms but, in fact, has been justified as adaptive in several ways. First is the tradition among psychologists (e.g., Trevarthen 1984) who suggest that, when young infants manifest depression, it tends strongly to evoke caretaker responses and thus has survival value. Second, depression is viewed by some as producing social cohesion, "making separation . . . a painful experience, and hence one to be avoided" (Averill 1979, p. 347; Panksepp 1982). Yet a third perspective, advanced by Price (1967), argues that depression is an adaptive emotion when one experiences a loss of social rank. By leading the organism to withdraw from social interaction at a time when additional losses or defeats might be incurred, depression facilitates survival by accommodating the organism to lower status until capacities and prospects for social reengagement have improved (see also Henry and Stephens 1977).

In contrast with anger, fear, depression, and satisfaction, other emotions, even if listed by some theorists as primary, are more difficult to justify on evolutionary-adaptive grounds. For example, guilt and shame are less evidently primary emotions in this respect. Whole cultures may be oriented toward one or the other of these (Benedict 1946), so a strong case cannot be made for either as primary in an evolutionary sense. It would also be difficult to make an evolutionary-adaptive case for nostalgia, *Schadenfreude*, or snobbery, for example.

Although love can be argued to have a clearly adaptive function, exemplified in interaction by the care giving induced by depression, it is not treated here as primary because it is not a developmentally early emotion, nor is it, as an emotion, autonomically differentiated from happiness (see Davitz 1969). Socialization also figures heavily in the capacity to experience love as an emotion.

Plutchik (1962), who supports an evolutionary view of emotions, has argued further that the primaries should show continuity from phylogenetically lower to phylogenetically higher species. This criterion is relatively easily satisfied with respect to fear, anger, and satisfaction. Reviewing evidence on animal display of emotion via facial expressions, Redican (1982) judged that there is reasonably good correspondence between human and nonhuman primate expressions for anger, happiness, and a blend of fear and surprise. However, depression is less well supported with respect to this mode of phylogenetic continuity.



### Ontogenetic Primacy

There is reason to think that primary emotions should be manifested earlier than others in ontogenetic development. According to Trevarthen (1984, p. 152), as early as the second month infant interactions with caretakers "appear to be adjusted against a triangle of negative affect: sadness (eliciting comfort and care), fear (favoring withdrawal of the person causing fear and bringing the caretaker and reassurance to the infant), and anger (obtaining control or active rejection of the other), positive engagement being regulated by expressions of interest and happiness." Each of the four primary emotions postulated here is contained in Trevarthen's observation.

Such emotions as pride, shame, guilt, hate, and love, among others, however, do not emerge in the earliest stages of development. Virtually all investigators agree that these emotions require some degree of cognitive awareness and differentiation of the self from others (Izard 1977; Lewis and Rosenblum 1978; Sroufe 1979). Emde (1980) found that more than 50% of mothers in his sample reported very early occurrence in their children of the hypothesized primary emotions: anger, 1.5 months; fear, 1.7 months; and joy (the satisfaction analogue), 1.8 months. However, sadness emerged for about 50% of cases only about the middle of the fourth month, which indicates, it may be conjectured, the high level of concern and attention infants receive in the earlier months.

The four hypothesized primary emotions not only appear relatively early in infancy, but, apparently owing to their interactional importance and frequency of occurrence, they engender the highest levels of comprehension and language production in childhood. Ridgeway, Waters, and Kucza (1985) found the following percentages of 18–23-month-old children who knew the meaning of the emotion terms or their synonyms: happy (77%), sad (50%), afraid (47%), and angry (43%). By 24–29 months of age, when language production is sufficiently advanced, the following percentages of children used the four emotion terms or their synonyms: happy (73%), sad (50%), afraid (50%), and angry (50%). In both the comprehension and production modes, the percentages for the four hypothesized primary emotions exceeded those for any other recognized emotions, for example, loving, liking, surprised, bored, ashamed, shy, hating, disgusted, jealous, guilty, or their synonyms. Fehr and Russell (1984) also argued for the linguistic precedence of primary emotions.

These results make sense, since, if fear, anger, depression, and satisfaction have evolutionary survival value and are primary in this respect, there is a strong presumption for their being available both as expressions and as symbols early in life. Indeed, as Hesse and Cicchetti (1982, p. 4) say, "In infancy, emotions can be considered the infant's language, allow-

ing us, along with their sensorimotor behaviors, to infer the infant's cognitive as well as emotional competence."

### Cross-cultural Universality

One of the most important contributions of the research on facial expressions has been to support the cross-cultural universality of six emotions, including fear, anger, depression, and satisfaction, the four primaries proposed here (Ekman 1973; Ekman, Friesen, and Ellsworth 1982*a*, 1982*b*).<sup>2</sup> Through detailed analysis of facial muscle movements in response to cross-culturally standardized incentives to display emotions, or in tasks requiring the identification of emotions, these investigators have demonstrated the universality of emotional expressions for these four emotions in diverse cultures. By working also with relatively isolated groups, Ekman and his colleagues have managed to exclude cultural diffusion as a possible source of commonality of expression. Cross-cultural universality of expression lends additional support to the argument favoring fear, anger, depression, and satisfaction as primary emotions, that is, ones that are neurologically structured in all human organisms and hence unlikely to be products of culture.

### Differentiated Autonomic Patterns

Central to my argument is the idea of autonomic differentiation among at least some emotions.<sup>3</sup> This supposition, appearing in the work of William James (1893), has had a modern incarnation in what is known as the

<sup>2</sup> Surprise and disgust are the additional cross-cultural universals found in facial expressions. They have been excluded from consideration here as primaries because (1) a number of investigators have treated them as reflexes not emotions (Tomkins 1982; Panksepp 1982); (2) they are most frequently prone to erroneous identification in cross-cultural studies, disgust often misidentified as anger and surprise as fear; (3) some cultures do not identify these as emotions (Lutz, in Panksepp 1982); (4) the phylogenetic continuity of surprise and disgust is least well-established among the universal facial expressions (Redican 1982); and (5) they have been viewed as lacking inherent content, merely acting as a transition to a successor emotion—usually fear for surprise and anger for disgust—and often intensifying the succeeding emotion. Fear and anger are more interesting sociologically, since they link more readily with social relations and their outcomes (Kemper 1978).

<sup>3</sup> Autonomic differentiation of emotions does not imply that persons experiencing emotions are always aware of, or can report correctly, their underlying physiological processes. Pennebaker found that, while individuals were more sensitive to some indicators than others, their judgments about their physiological states were, in general, poor. He conjectured that "people may not encode sensory information in the same ways that we measure it . . . and that accuracy . . . may be most likely to occur during extreme physiological conditions" (1982, p. 154).

Funkenstein (1955) hypothesis, namely, that fear is associated with autonomic processes indicating the action of epinephrine (E) and anger with the action of norepinephrine (NE). Both these neurochemicals<sup>4</sup> activate the sympathetic nervous system (SNS), although in different ways. Satisfaction and depression, which appear to depend on variable activation of the parasympathetic nervous system (PNS), have been associated with the action of acetylcholine (ACh), which is the neurotransmitter of the PNS.<sup>5</sup> (These connections have been discussed by Ax 1953; Funkenstein 1955; Funkenstein, King, and Drolette 1957; Schachter 1957; Elmadjian, Hope, and Lamson 1958; Graham, Cohen, and Shmavonian 1967; Gellhorn 1967, 1968; Stanley-Jones 1970; Obrist 1976; Weerts and Roberts 1976; Henry and Stephens 1977; Kemper 1978; Fromme and O'Brien 1982; and Vingerhoets 1984.)

However, subsequent to the publication of the classic experiment of Schachter and Singer (1962) (and associated work by Levi [1972] and Frankenhaeuser [reviewed in 1976]), interest in the Funkenstein hypothesis declined sharply. These researchers supposedly found that E is associated with diverse emotions—anger and euphoria—and, therefore, arousal is undifferentiated for emotions. On the strength of Schachter and Singer's findings, some sociologists of emotions concluded that situational interpretation alone determines qualitatively different emotional experience (Shott 1979; Hochschild 1979; Gordon 1981; except see Thoits [1984], who accepts some differentiation of emotions according to the autonomic states of "excitation and quiescence"). One of the sharpest disagreements among sociologists of emotions is focused here (Kemper 1981; Stryker and Statham 1985).

Although a long time in coming, a counterposition to Schachter and Singer (and to the associated positions of Levi and Frankenhaeuser) has emerged. Some of this is theoretical, and some is based on empirical findings. Plutchik and Ax (1967) and Stein (1967) were early critics of

<sup>4</sup> Epinephrine (adrenaline) and norepinephrine (noradrenaline) are catecholamines that act as neurotransmitters. When their role in activating organs of the autonomic nervous system is referred to, both are frequently called neurochemicals or neurohumors (see Pribram 1980, p. 262).

<sup>5</sup> The two branches of the autonomic nervous system operate in approximately reciprocal fashion to regulate the activity of bodily organs that are responsive in emotional states, e.g., heart, lungs, blood vessels, skin, digestive system. The SNS is ordinarily responsible for activation or arousal, while the PNS is ordinarily responsible for deactivation. But the relations between these systems are complex. To a certain extent, either system acting alone can achieve the effect of the other; e.g., a reduction in SNS activity achieves approximately the same effects as an increase in PNS activity, and vice versa. The neurochemicals E, NE, and ACh are the chemical messages transmitted across synapses to activate or deactivate the organs of the autonomic nervous system (Strand 1983).

Schachter and Singer's work. More recently, I (Kemper 1978) have analyzed the experimental paradigms of the anti-Funkenstein researchers and shown that they failed to consider the social relations that were induced between their subjects and themselves or that were inherent in the experimental situation. When taken into account, these sociological factors could be seen to instigate emotions that accommodate the differentiated autonomic pattern proposed by Funkenstein. Other critiques of the Schachter and Singer position have been offered by Scheff (1979), Tomkins (1982), and Shaver and Klinnert (1982).

In general, experiments seeking to replicate the original results obtained by Schachter and Singer have failed to do so (Maslach 1979; Marshall and Zimbardo 1979) or have had only mixed success (Erdmann and Janke 1978). Indeed, in one study designed to confirm the Schachter and Singer findings (Erdmann and Van Lindern 1980), the results accorded with the original differentiations in autonomic phenomena related to fear and anger found by Ax (1953) and Schachter (1957), which correspond to the likely effects of E and NE, as argued by Funkenstein (1955). Scherer, Summerfield, and Wallbott (1983) also obtained similar results using entirely different methods, hence gaining multimethod confirmation (Campbell and Fiske 1959) of Funkenstein's point. Kadish (1983), too, confirmed the relationship between NE and anger, as Funkenstein had proposed. Finally, Ekman, Levenson, and Friesen's (1983) findings on the autonomic substrates of facial expressions of fear, anger, and happiness (examined along with sadness, surprise, and disgust) almost perfectly reproduce the pattern of the Funkenstein results, if we take into account that different physiological indicators were observed. Fear and anger were autonomically distinct from satisfaction and, crucially, distinct from each other.<sup>6</sup>

In addition to the several experimental failures to replicate the original findings of Schachter and Singer and, per contra, the support given to the Funkenstein hypothesis by several recent studies, assessments of the nearly two decades of research that followed the Schachter and Singer study (Manstead and Wagner 1981; Cotton 1981; Reizenzein 1983; Parkinson 1985) have essentially found that the strong conclusions of Schach-

<sup>6</sup> Although Ekman, Levenson, and Friesen (1983) have been criticized because of their small sample size ( $N = 16$ ) and the use of professional actors ( $N = 12$ ), who are experienced (as subjects) in facial display, and of "researchers who study the face" ( $N = 4$ ) and who are therefore knowledgeable in emotions theory, it is highly unlikely that this group could have swayed the results to conform so closely to the Funkenstein pattern. The actors would not have known of it, and the researchers, who probably did, are not likely to have favored it, a priori. Even if the whole sample had wished to reproduce Funkenstein's pattern, it would constitute a remarkable achievement on their part to have done so on four of the five autonomic indices used in the study.

ter and Singer must be significantly modified. The way appears open again to explore the implications of the Funkenstein hypothesis regarding differentiated autonomic substrates for different emotions. The question now is, What does it matter whether or not Funkenstein and others in his tradition are right?

The Funkenstein hypothesis (enlarged to include depression and satisfaction and their locus in the PNS) provides additional grounds for designating fear, anger, depression, and satisfaction as the primary emotions. The neurochemicals—E, NE, and ACh—are obviously innate and are the only ones known to activate or modulate the different autonomically governed systems—cardiovascular, lung, digestive, skin, and so on—that are associated with emotions. And the only emotions to which these neurochemicals have been linked specifically and differentially are fear, anger, depression, and satisfaction. This evidence, marshaled in support of the Funkenstein hypothesis, argues favorably for fear, anger, depression, and satisfaction as primary.

Although some sociologists may understandably have found some appeal in the physiologically uncomplicated position of Schachter and Singer, there is now good reason to doubt the validity of that view. The contrary hypothesis of Funkenstein accommodates the set of primary emotions for which there is evolutionary, ontogenetic, and cross-cultural support by adding the evidence of autonomic differentiation. But, more than that, it can be linked to outcomes of social relations; a sociological understanding of primary emotions need not, therefore, exclude their physiological substrate. I turn to this now.

### Social Relations, Emotions, and Neurochemicals

Though relatively little investigated directly, a very large class of emotions results from involvement in social interaction (Kemper 1978, 1984; Scherer, Summerfield, and Wallbott 1984; Ekman 1984). There is even evidence of cross-cultural agreement on what kinds of situations produce what kinds of emotions (Boucher and Brandt 1981). There is less agreement, however, on what constitutes a "situation," that is, how best to characterize social interaction and its outcomes. This lack of agreement flies somewhat in the face of an empirical understanding of the central dimensions of interaction and social relationships that has been developing since the mid-1950s and has intellectual roots that go back much further. I (Kemper 1978) have reviewed the extensive evidence for two fundamental dimensions of "proaction." They are variously labeled but consistent in meaning: one of these reflects relations of control, dominance, punishment, forced compliance, and the like; the other dimension reflects relations of voluntary compliance, sociability, solidarity, reward,

and affection (for a recent summary of sources, see Fromme and O'Brien [1982, p. 341]; Lutz [1982], for additional cross-cultural evidence; and McCoy and Masters [1985], for evidence from studies of children). I (Kemper 1978, 1981) call these social relational dimensions *power* and *status-accord* (or, briefly, *status*), respectively.

The power and status dimensions bear both on the matter of primary emotions and on the autonomic issue discussed above, namely, the detection of three specific neurochemicals that are associated with fear, anger, depression, and satisfaction.

First, I have proposed (Kemper 1978) that the primary emotions result from major outcomes of power-status interaction: Fear results from interaction outcomes where actors are subject to the power of others because that power is greater than their own. Anger results from interaction outcomes in which expected, customary, or deserved status has been denied or withdrawn by another actor who is seen to be responsible for the reduced status. Depression results from interaction outcomes in which status has been lost or denied, but where the actor deems him- or herself irremediably responsible for the loss or incapable of retrieving the desired benefit. Satisfaction results from interactions in which the power outcome is nonthreatening and the status outcome is according to what was desired and expected.<sup>7</sup> In this manner, the power and status interaction dimensions link with the primary emotions.

Second, via the Funkenstein hypothesis, the primary emotions link with the neurochemicals: E with fear, NE with anger, and ACh variably with satisfaction and depression.

By theoretical surmise, the power-status dimensions link with the neurochemicals. This heuristic conclusion provides an overarching framework within which social relations, emotions, and neurochemicals are aligned elements. Though as yet only dimly perceived, the integration of the social with the physiological through the emotions is rich with promise. To test the framework with new data collected for that purpose is the work of the future, but we may derive some benefit now from becoming sensible of the hypothesis. Specifically, the integration of the two fundamental social relational dimensions with the autonomic and emotional spheres lends additional support to the argument for fear, anger, depression, and satisfaction as the primary emotions.

In conclusion, five bases have been offered for proposing fear, anger,

<sup>7</sup> Although other emotions can be linked to interactional outcomes described in power-status terms, they depend on considerable exposure to socialization, the development of a self-other system, or the recognized involvement of third parties (Kemper 1978). These elaborations of the social go far beyond what is available relatively early ontogenetically, and they do not have the same evolutionary-adaptive value as the emotions that result from the major power-status interaction outcomes.

depression, and satisfaction as primary emotions: evolutionary value, ontogenetic primacy, cross-cultural universality, differentiated autonomic pattern, and integration of social relations, emotions, and physiological processes. While the argument for the primary emotions has derived its vigor from a positivist view in the sociology of emotions, in the next section I demonstrate how other emotions are necessarily socially constructed.

#### SOCIAL CONSTRUCTION OF SECONDARY EMOTIONS

The central argument of this part is that emotions beyond the primaries are products of social construction through the attachment of social definitions, labels, and meanings to differentiated conditions of interaction and social organization. But my argument for the primacy of fear, anger, depression, and satisfaction, and their associated autonomic substrates, requires the following proviso: the socialization of secondary emotions must take place in the context of experiencing one or more of the primaries. This is a necessary conclusion, since, otherwise, there would be no way to introduce the crucial autonomic component into the secondary emotions; we would be dealing not with emotions but with cognitions only.<sup>8</sup> By linking the autonomic arousal of a primary emotion with the process of social construction, we obtain an understanding of secondary emotions that conforms logically and empirically to the known involvement of both the biological and social components. Three examples follow.

#### Guilt

In my social interactional theory of emotions (Kemper 1978), I proposed that guilt results from a felt sense of using excess power against another. This power can take any of the multitude of forms of inflicting noxious outcomes or deprivations on the other. I hypothesize that guilt is yoked, via association (as in classical conditioning) of social definitions and labels, with fear, and, to the extent that guilt is experienced as an emotion, it is the autonomic arousal associated with fear that makes guilt an emotional, as opposed to merely cognitive, experience.

Although guilt has been identified in the facial expressions of very

<sup>8</sup> It may be possible to construct via socialization an "idea" of guilt or shame, etc., without an accompanying physiological component. One may "think" the emotion but not feel it. It is likely that emotional socialization varies greatly according to how strongly feelings of secondary emotions are imparted. This variability results from how closely the social construction of the emotions was tied to autonomic processes underway at the time of socialization.

young infants (Emde 1980), most reports place it relatively late in the developmental unfolding of emotions, at least into the second year (Darwin 1965; Izard and Buechler 1979; Sroufe 1979). By all accounts, fear, the primary emotion to which I suggest guilt is bound, has long since emerged in the child (Izard and Buechler 1979) and is available for association with the social definitions of the later emotion. Ridgeway, Waters, and Kuczaj (1985) provide evidence of the significantly later comprehension and verbal production of the term "guilt" as compared with "fear." Between 54 and 59 months of age, only 23% of children in their sample understood the term "guilt," and virtually none used it. By contrast, at age 30–35 months, 93% of children understood, and nearly 80% used, the term "scared" (equivalent of fear).

The association of guilt with fear is strongly supported by many theorists of emotions. Izard (1977, pp. 429–37) has usefully reviewed the arguments, and these will only be summarized here. Freud ([1936] 1959) viewed guilt as a form of anxiety, and this position has dominated most conceptions of guilt. Mandler (1975) judged that guilt is anxiety over a misdeed for which punishment is feared. Piers and Singer (1953) saw guilt as founded directly on the threat of punishment by a parental figure. Mowrer (1960) analyzed guilt as a standard outcome of learning through rewards and punishments. The latter are associated with trespasses and come to be anticipated after trespass. Hence, guilt is fear of the punishment that has followed upon the commission of forbidden acts. We see that there is virtual unanimity in current theoretical understanding of the fear-related conditions for the development of feelings of guilt. Empirical work supports this surmise.

In an effort to discriminate different bases of moral orientation, Hoffman (1970), with Salzstein, has distinguished two types. In one of these, children chose a moral alternative, more or less spontaneously, out of empathy with a victim; in the other, children chose according to the "right" thing to do. Hoffman labeled the first type "humanistic-flexible" and the second "rigid-conventional." According to Hoffman, the latter type appeared to be responding morally out of a sense of anxiety and fear of punishment. We may understand that their moral conduct is based on guilt rather than empathy and that the guilt is based on fear.

It is not difficult to imagine the social construction and socialization of guilt: a forbidden act (e.g., harming a sibling or threatening a parent) is punished, or punishment is anticipated based on past experience; at the same time verbal indications are given, linking the act, the punishment, and the label ("You should feel guilty for acting that way!") to the feeling that already exists in the context of punishment, namely, fear. Henceforth, the child can call up the associated symbols and meanings imparted to fear of punishment that is evoked by certain prohibited actions, or



thoughts of such actions, on his or her part. Gordon (1981) provides details on how this process can be elaborated by models and by media socialization. Unger (1962, reported in Izard 1977, pp. 433–35) is particularly attentive to the parental acts that engender both fear and fear of abandonment in the young child and form the matrix for the developed conception of guilt.

In respect of punishments that are particularly effective in socializing guilt, Sears, Maccoby, and Levin (1957) found that the most important was withdrawal of love. Hence, the most potent fear aroused in the punishment situation may be fear of loss of love. Where there is no love to lose, the fear would ordinarily be considerably less; the likelihood is then much reduced of linking the several elements of fear, forbidden act, punishment, and label.

Hoffman noted that the “available evidence suggests . . . that in the 2–4 year-old range children experience pressures from mothers to change their behavior on the average of every six to eight minutes throughout their waking hours, and in the main they end up complying” (1977, p. 93). Demos (1982) also observed a change over time in the pattern of mothers’ evaluations, comments, and voice tones. When their infants were 9–15 months old, the mothers’ vocal productions were mainly positive. By the 21-month period, mothers had shifted to a more irritated, perfunctory, and didactic tone, oriented, as in the materials reported by Hoffman, toward obtaining behavior change.

Certainly, the high rate of behavior change parents require of their children by the second year is not achieved in most cases without punishment of which the child ordinarily develops some fear. Indeed, before gaining the ability to reason through the grounds for a behavior change, children must necessarily control their conduct largely through fear of the aversive consequences learned through previous punishment. In this respect, until certain cognitive capacities develop, children may not (alas) differ much from rats.

If the socialization conditions for guilt are associated with the primary emotion fear, there ought to be a fear component in the state of guilt. Indeed, in Izard’s (1977) empirical profile of emotions in the “guilt situation,” guilt feelings are accompanied by distress, fear, interest, shyness, anger, surprise, and joy, in that order. In similar research, Mosher and White (1981) also found fear to be the second most prominent emotion accompanying guilt. Using a different method of investigating Izard’s list of emotions, Kotsch, Gerbing, and Schwartz (1982) found a moderately high correlation (.43) between fear and guilt.

Unfortunately, there are few experimental studies of the physiology of guilt. One, by Gambaro (1967, reviewed by Izard 1977, pp. 437–38) compared high- and low-guilt subjects’ diastolic blood pressure, in a

laboratory situation, after what might be seen as justified aggression. Low-guilt subjects' blood pressure decreased significantly more after aggression than did the blood pressure of high-guilt subjects. We may assume fear of the consequences of aggression in the case of high guilt.

### Pride

In a socialization paradigm I have provided (Kemper 1978, chap. 11), actors obtain voluntary compliance and rewards from others (i.e., status) through manifestations of competence and achievement. The better the performance is, the greater, in general, the status obtained. I have suggested that the emotional concomitant is (justifiable) pride, a feeling of satisfaction that focuses on the self as worthy. I hypothesize that pride is linked to the primary emotion of satisfaction.

Early infant satisfaction, manifested by smiling and cooing, is at first related to internal processes, such as rapid eye movement (REM) sleep (Emde 1980). The social smile, which is a response to external stimuli, does not emerge until the second or third month. With maturation, however, smiling and other positive behaviors, indicating satisfaction, derive from interaction with those in the environment, mainly the caretaker (Malatesta 1981, 1985; Trevarthen 1984). There is no serious argument against the proposition that the capacity to experience satisfaction is innate, or prewired, so to speak.

Clearly, infant satisfaction can result from certain organismic conditions, for example, being warm, dry, and fed. But, if this were all, there would be no motivational impetus for growth. Piaget (1962) proposed that the infant derives pleasure from the exercise of newly developed capacities. Sroufe (1979) also associated joy with "active mastery." At first, such mastery may be purely at the level of what Hunt (1965) called "recognitive familiarity"; he regards the first social smiles as expressions of satisfaction at the cognitive recapture of the caretaker. According to Izard (1978), this satisfaction fosters attachment to the caretaker.

Mastery of novel stimuli through recognition, at the earliest level of development, can be generalized to other kinds of mastery as well, with its attendant satisfaction. But child development does not take place in isolation. As Stipek (1983, p. 45) says: "Parents' positive responses to young children's mastery behaviors may provide the link between intrinsic 'pleasure in mastery' and externally, or socially, derived pride. The child's first steps, in addition to being intrinsically satisfying, are met with smiles, applause, hugs, and other behaviors signaling positive evaluation. . . . Thus, achievements . . . take on the added value of social sanctioning. As a result, the biologically derived affect, 'effectance' or 'joy,' that earlier accompanied the exercise of developing competencies takes on a

new social dimension and is labeled 'pride' or 'self-esteem.' ” In the case of pride, the capacity to feel satisfaction is further differentiated through social definitions that augment the pleasure of mastery with the pleasure of being a self that can engage in mastery. Pennebaker (1982) also provides evidence for the association of pride and satisfaction. His research respondents reported that they could not distinguish between pride and joy (the satisfaction analogue).

### Shame

Shame can be understood as an emotion that occurs on realization that one has acted in a manner that belies one's status. Others credit one with a variety of qualities for which they confer status, for example, probity, manners, intelligence, kindness, discretion, judgment, and competences of different sorts. When one senses one has acted unworthily in any of these regards, the felt emotion is shame (Izard 1977, 1978; Kemper 1978). Shame is different from guilt in that the focus of shame is on the self and its status unworthiness (Shott 1979). Guilt, however, focuses on the hurt or wrong one has done to another. One may feel both guilt and shame in a given situation, but the two are different emotions (Izard 1977; Kemper 1978).

I hypothesize that shame is attached to the primary emotion of anger. According to Izard (1977), there seems to be agreement on some of the physical symptoms of shame: hanging the head or dropping the eyes and blushing, although the first two of these seem more appropriate to shyness than shame. Blushing also appears to be unique to humans according to Darwin (1965).

When shame is experienced, the frequently manifested blush is essentially the same physiological response as in anger, when the face becomes flushed through vasodilation. This is because anger is the likely primary emotional base of shame. For the most part, the anger here is toward the object that has acted unworthily, namely, the self. How the self can be angry with the self is worthy of conjecture. Shame as an emotional response is, paradigmatically, induced by another actor. In childhood, this is usually the parent, who expresses a sense of disappointment or anger when the child has done something that is discreditable. The parent's emotion is on display during the shaming episode. By means of the somewhat opaque process "identification," the child picks up the definitions and cognitions about the self, as well as the accompanying parental emotions—anger and disappointment. In symbolic interactionist terms, we would say that the child takes the role of the parent toward the self and responds to the self with the parent's emotion (Shott 1979). Indeed, by expressing the parent's emotion of disappointment and anger toward the

self, the child indicates emotional acceptance of the parent's definition of the situation.

The parent's verbal constructions and delineations of meaning are crucial for associating parental anger and disappointment with shame as opposed to guilt. In the case of shame, the instigating act or trespass is defined as reflecting an unworthiness of the child, hence, the child's necessary forfeit of previously accorded status (e.g., "Only a *baby* would do that!"). In guilt, the definitional focus is on the hurt or damage done and on the retributive aspects of the situation (e.g., "You did wrong, and God will punish you for that") (Kemper 1978).

Shame entails an acceptance of a definition of the situation as warranting status reduction, and, further, that this was caused by an inadequacy of the self. This brings the social relational conditions for shame very close to those for depression, as defined above, and, often, the two emotions understandably occur together. The difference is that, in shame, the status loss in some sense was avoidable and is fundamentally remediable. In depression, the status loss may or may not be considered to have been avoidable, but it is deemed irremediable, hence, the dejection, despair, and resignation that accompany intense depression. Individuals experiencing status loss for which they feel themselves responsible can easily entertain both understandings of the situation in close conjunction. Shame, with its grounding in anger, may be one of the mechanisms by which anger turned inward is seen in depression. Scheff (1986), developing the position set forth by Lewis (1971), also associates shame with anger.

Although Izard (1977) did not provide an emotional profile for shame apart from shyness, Mosher and White (1981) conducted research along lines similar to Izard's and obtained a separate profile for shame. The results conform only indirectly to what is proposed here about the relation of this emotion to anger. Mosher and White found that the shame profile included guilt, sadness, embarrassment, fear, and disgust, in that order. Anger is not significantly present, which seems contrary to both theory and common understanding. However, the profile for embarrassment, which is third-ranked in shame, included shame, surprise, shyness, and anger. Kotsch, Gerbing, and Schwartz (1982), however, found that a "shame" item in their three-item shame-shyness factor correlated better with anger than did the two items more clearly identified with shyness. All in all, these data only partially confirm what is hypothesized here about shame.

Although studies analyzing neurochemicals in the context of emotions other than fear or anger are rare, Biersner, McHugh, and Rahe (1981) examined E and NE secretions in an affective condition that can be understood as shame. They collected attitudinal, evaluative, and physio-

logical data from members of an amateur softball team who were divided into a more skilled and a less skilled group. The only physiological difference found between the two groups, averaged over seven games, was the higher postgame NE level in the less skilled group. There were no main effects depending on whether games were won or lost and no interaction effects between skill level and winning or losing.

Biersner, McHugh, and Rahe (1981, p. 16) interpreted these data as follows: "Previous findings showed that members of the less skilled group reported that they expected to perform as well as the skilled group before the start of the game, yet subsequent performance fell much below this expected level. That they were knowledgeable of this disparity was demonstrated by post-game performance self-ratings, which were significantly below pre-game performance expectations. Other researchers have demonstrated that discrepancies between expectations and performance result in a variety of physiological responses indicative of stress and arousal." It is well within the scope of my theory of emotions (Kemper 1978) to deduce that the less skilled players were experiencing shame over their performance, inadequate as it was in their own eyes. According to what was hypothesized above, shame should have the same underlying autonomic state as anger, which, following the Funkenstein hypothesis, is characterized by increased secretion of NE. The less skilled players did show increased NE, which contributes some support for the hypothesis of this section.

In sum, I have marshaled evidence here to show how three secondary emotions—guilt, pride, and shame—can be linked by means of socialization with one or another of the primary emotions, hence taking on the autonomic status of the primary in whose context it was likely to have been socially constructed. I believe the same can be shown for other secondary emotions.

## CONCLUSION

I have argued that there is an autonomic ground—among others—for judging which emotions are primary and that secondary emotions are socially constructed but attain their emotional tone by virtue of their linkage, in the course of socialization, with the primary emotions. This formulation does justice to two perspectives, namely, one that locates emotions substantially in biological processes and one that locates them in social ones. Neither of these perspectives is complete in itself and only by wedding them in a manner such as that suggested here (or some other) can we gain a more accurate sociological understanding of the full range of emotions.

FEAR	ANGER	DEPRESSION	HAPPINESS (satisfaction)	
Guilt	Shame	Ennui	Pride	
		Resignation	Gratitude	
			Loving	
			Being loved	
FEAR-	FEAR-	FEAR-	ANGER-	DEPRESSION-
DEPRESSION	ANGER	HAPPINESS	HAPPINESS	HAPPINESS
Anxiety	Hate	Wonder	Vengeance	Nostalgia
	Jealousy	Awe	Snobbery	Yearning
	Envy	Hope	Contempt	
		Shyness	Schadenfreude	
FEAR-ANGER-DEPRESSION				
Grief				

FIG. 1.—How emotions may be attached to their primaries

The theoretical position outlined here can help to focus sociological research efforts in the important domain of emotional socialization. Although this is an area of primary concern among sociologists of emotion (Kemper 1978; Gordon 1981; Hochschild 1983), observations of the actual social construction of the major secondary emotions are virtually nonexistent. Even developmental psychologists pay scant attention to the precise moment when emotional socialization is occurring (for an exception, see Malatesta and Haviland 1982). By careful observation of the social relational and emotional conditions accompanying the labeling, defining, and reinforcing of emotional insight and expression, sociologists can contribute significantly to the understanding of the social construction of secondary emotions.

How secondary emotions other than guilt, shame, and pride attach to the primary emotions fear, anger, depression, and satisfaction is also an important question. Here, only the most tentative steps can be taken to provide an answer. Very little research pertains to the autonomic involvement of emotions other than fear, anger, depression, and satisfaction. What is proposed here can only be suggestive. Figure 1 contains some hypothesized emotions that may be best understood through their connection with the primaries under whose heading(s) they fall.<sup>9</sup> Emotions may be linked not only to individual primaries but also to pairs and even, possibly, higher-order combinations. Plutchik (1980) has a similar view.

One issue implicit in the emotional conjunctions displayed in figure 1 is the manner in which the SNS and PNS may cooperate to produce emo-

<sup>9</sup> I have substituted the term "happiness" for "satisfaction" in fig. 1 to conform to more common usage in respect of the emotions that are shown in the table linked to it.

tions, for example, in the fear-happiness or anger-happiness cases. Ordinarily, SNS and PNS operate in reciprocal fashion (Gellhorn 1967) to maintain autonomic balance and therefore are not usually thought of as cooperating to produce discrete emotions. This is an empirical question, but such cooperation is a plausible mechanism for explaining the autonomic role in the production of some of the more complex secondary emotions. A suggestion by Hochschild (1983) can help here. She has proposed that secondary emotions may depend on sequencing of the underlying primaries. These may even alternate rapidly. Ekman, Friesen, and Ellsworth (1982*a*) also speak of blended emotions in this manner.

Finally, it is useful to reflect on the question with which this paper began: How many emotions are there? The answer seems to depend on how many social situations a culture differentiates and on the degree of motivational interest or concern it produces in its members about them. An emotion-poor culture differentiates fewer emotions because its social life is less differentiated (see Levy [1973] on the "hypocognition," or underidentification, of certain emotions among the Tahitians; also see Kemper [1981] for analysis of this in social structural terms). Where social patterns are more complex, social construction differentiates emotional life more finely in order to accommodate the greater variety of socially differentiated conditions. But even these new emotions, if they are experienced as emotions, must retain their connections with the autonomic substrate that is available through linkages with the primary emotions.

## REFERENCES

- Aberle, D. F., A. K. Cohen, A. K. Davis, M. J. Levy, and F. X. Sutton. 1950. "The Functional Prerequisites of a Society." *Ethics* 60:100-11.
- Allport, Floyd H. 1924. *Social Psychology*. Boston: Houghton Mifflin.
- Arieti, Silvano. 1970. "Cognition and Feeling." Pp. 135-43 in *Feelings and Emotions: The Loyola Symposium on Feelings and Emotions*, edited by Magda B. Arnold. New York: Academic.
- Averill, James R. 1979. "The Functions of Grief." Pp. 339-68 in *Emotions in Personality and Psychopathology*, edited by Carroll Izard. New York: Plenum.
- . 1980. "A Constructivist View of Emotion." Pp. 305-39 in *Emotion: Theory, Research, and Experience*, vol. 1. Edited by Robert Plutchik and Henry Kellerman. New York: Academic.
- Ax, Albert. 1953. "The Physiological Differentiation between Fear and Anger in Humans." *Psychosomatic Medicine* 15:433-42.
- Balswick, Jack, and Christine P. Avertt. 1977. "Differences in Expressiveness: Gender, Interpersonal Orientation, and Perceived Parental Expressiveness as Contributing Factors." *Journal of Marriage and the Family* 39:121-27.
- Barchas, Patricia. 1976. "Physiological Sociology: Interface of Sociological and Biological Processes." Pp. 299-333 in *Annual Review of Sociology*, vol. 2. Palo Alto, Calif.: Annual Review.
- Benedict, Ruth. 1946. *Patterns of Culture*. New York: Penguin.

- Biersner, Robert J., William B. McHugh, and Richard H. Rahe. 1981. "Biochemical Variability in a Team Sports Situation." *Journal of Human Stress* 7:12-17.
- Boucher, Jerry D., and Mary E. Brandt. 1981. "Judgment of Emotion from American and Malay Antecedents." *Journal of Cross-Cultural Psychology* 12:272-83.
- Brenner, Charles. 1980. "A Psychoanalytic Theory of Affects." Pp. 341-48 in *Emotion: Theory, Research, and Experience*, vol. 1. Edited by Robert Plutchik and Henry Kellerman. New York: Academic.
- Campbell, Donald T., and Donald W. Fiske. 1959. "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix." *Psychological Bulletin* 56:81-105.
- Cleve, Felix M. 1969. *The Giants of Pre-Socratic Greek Philosophy: An Attempt to Reconstruct Their Thought*, vol. 2. The Hague: Nijhoff.
- Collins, Randall. 1975. *Conflict Sociology*. New York: Academic.
- . 1984. "The Role of Emotion in Social Structure." Pp. 385-96 in *Approaches to Emotion*, edited by Klaus R. Scherer and Paul Ekman. Hillsdale, N.J.: Erlbaum.
- Cotton, John L. 1981. "A Review of Research on Schachter's Theory of Emotion and the Misattribution of Arousal." *European Journal of Social Psychology* 11:365-97.
- Darwin, Charles. [1872] 1965. *The Expression of Emotions in Man and Animals*. Chicago: University of Chicago Press.
- Davitz, Joel. 1969. *The Language of Emotions*. New York: Academic.
- Demos, Virginia. 1982. "The Role of Affect in Early Childhood: An Exploratory Study." Pp. 79-123 in *Social Interchange in Infancy: Affect, Cognition, and Communication*, edited by Edward Tronick. Baltimore: University Park.
- Ekman, Paul. 1973. "Cross-Cultural Studies of Facial Expression." Pp. 169-222 in *Darwin and Facial Expressions*, edited by Paul Ekman. New York: Academic.
- Ekman, Paul, Wallace V. Friesen, and Phoebe Ellsworth. 1982a. "What Emotion Categories or Dimensions Can Observers Judge from Facial Behavior?" Pp. 39-55 in *Emotion in the Human Face*, 2d ed. Edited by Paul Ekman. Cambridge: Cambridge University Press.
- . 1982b. "What Are the Similarities and Differences in Facial Behavior across Cultures?" Pp. 128-43 in *Emotion in the Human Face*, 2d ed. Edited by Paul Ekman. Cambridge: Cambridge University Press.
- Ekman, Paul, Robert W. Levenson, and Wallace V. Friesen. 1983. "Autonomic Nervous System Activity Distinguishes between Emotions." *Science* 221:1208-10.
- Elmadjian, Fred, Justin M. Hope, and Edwin T. Lamson. 1958. "Excretion of Epinephrine and Norepinephrine under Stress." Pp. 513-45 in *Recent Progress in Hormone Research*, edited by Gregory Pincus. New York: Academic.
- Emde, Robert N. 1980. "Levels of Meaning for Infant Emotions: A Biosocial View." Pp. 1-37 in *Development of Cognition, Affect, and Social Relations: The Minnesota Symposium of Child Psychology*, vol. 13. Edited by W. Andrew Collins. Hillsdale, N.J.: Erlbaum.
- Epstein, Seymour. 1984. "Controversial Issues in Emotion Theory." Pp. 64-88 in *Review of Personality and Social Psychology*, vol. 5. Edited by Philip Shaver. Beverly Hills, Calif.: Sage.
- Erdmann, Gisella, and Werner Janke. 1978. "Interaction between Physiological and Cognitive Determinants of Emotions: Experimental Studies on Schachter's Theory of Emotions." *Biological Psychology* 6:61-74.
- Erdmann, Gisella, and Beatrix Van Lindern. 1980. "The Effects of Beta-Adrenergic Stimulation and Beta-Adrenergic Blockade on Emotional Reactions." *Psychophysiology* 17:332-38.
- Fehr, Beverley, and James A. Russell. 1984. "Concept of Emotion Viewed from a Prototype Perspective." *Journal of Experimental Psychology: General* 13:464-68.
- Frankenhaeuser, Marianne. 1976. "Experimental Approaches to Catecholamines and



- Emotions." Pp. 209–34 in *Emotions: Their Parameters and Measurement*, edited by Lennart Levi. New York: Raven.
- Freud, Sigmund. [1936] 1959. "Inhibitions, Symptoms, and Anxiety." Pp. 77–86 in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, vol. 20. Edited by John Strachey. London: Hogarth.
- Frijda, Nico H. 1970. "Emotion and the Recognition of Emotion." Pp. 241–50 in *Feelings and Emotions: The Loyola Symposium on Feelings and Emotions, 1968*, edited by Magda B. Arnold. New York: Academic.
- Fromme, Donald K., and Clayton S. O'Brien. 1982. "A Dimensional Approach to the Circular Ordering of Emotions." *Motivation and Emotion* 6:337–63.
- Funkenstein, Daniel. 1955. "The Physiology of Fear and Anger." *Scientific American* 192:74–80.
- Funkenstein, Daniel, Stanley H. King, and Margaret E. Drolette. 1957. *Mastery of Stress*. Cambridge, Mass.: Harvard University Press.
- Gambaro, S. 1967. "Blood Pressure Relations to Expressed and Unexpressed Anger in Low Guilt and High Guilt Subjects." Ph.D. Dissertation, Michigan State University.
- Gardiner, H. M., Ruth C. Metcalf, and John G. Beebe-Center. [1937] 1970. *Feeling and Emotion*. Westport, Conn.: Greenwood.
- Gellhorn, Ernst. 1967. *Principles of Autonomic-Somatic Integrations: Physiological Basis and Psychological and Clinical Implications*. Minneapolis: University of Minnesota Press.
- . 1968. "Attempt at a Synthesis: Contribution to a Theory of Emotion." Pp. 144–53 in *Biological Foundations of Emotion: Research and Commentary*. Glenview, Ill.: Scott, Foresman.
- Gordon, Steven L. 1981. "The Sociology of Sentiments and Emotion." Pp. 562–92 in *Social Psychology: Sociological Perspectives*, edited by Morris Rosenberg and Ralph H. Turner. New York: Basic.
- Graham, Lindsey A., Sanford I. Cohen, and Barry M. Shmavonian. 1967. "Some Methodological Approaches to the Psychophysiological Correlates of Behavior." Pp. 178–91 in *Emotional Stress: Physiological and Psychological Reactions. I. Medical, Industrial, and Military Applications*, edited by Lennart Levi. New York: Elsevier.
- Hamburg, David. 1963. "Emotions in the Perspective of Human Evolution." Pp. 300–17 in *Expression of Emotions in Man*, edited by Peter H. Knapp. New York: International Universities.
- Henry, James P., and Patricia M. Stephens. 1977. *Stress, Health and the Social Environment: A Sociobiologic Approach to Medicine*. New York: Springer-Verlag.
- Hesse, Petra, and Dante Cicchetti. 1982. "Perspectives on an Integrated Theory of Emotional Development." Pp. 3–48 in *Emotional Development*, edited by Dante Cicchetti and Petra Hesse. San Francisco: Jossey-Bass.
- Hochschild, Arlie R. 1979. "Emotion Work, Feeling Rules, and Social Structure." *American Journal of Sociology* 85:551–75.
- . 1983. *The Managed Heart*. Berkeley and Los Angeles: University of California Press.
- Hoffman, Martin L. 1970. "Moral Development." Pp. 261–360 in *Carmichael's Manual of Child Psychology*, vol. 2. 3d ed. Edited by Paul H. Mussen. New York: Wiley.
- . 1977. "Moral Internalization: Current Theory and Research." Pp. 85–133 in *Advances in Experimental Social Psychology*, vol. 10. Edited by Leonard Berkowitz. New York: Academic.
- Hunsaker, Dean. 1983. "Comment on Kemper." *American Journal of Sociology* 89:434–40.

- Hunt, James McV. 1965. "Intrinsic Motivation and its Role in Development." Pp. 189–282 in *Nebraska Symposium on Motivation*, edited by D. Levine. Lincoln: University of Nebraska Press.
- Izard, Carroll E. 1972. *Patterns of Emotions: A New Analysis of Anxiety and Depression*. New York: Academic.
- . 1977. *Human Emotions*. New York: Plenum.
- . 1978. "On the Ontogenesis of Emotions and Emotion-Cognition Relationships in Infancy." Pp. 389–413 in *The Development of Affect*, edited by Michael Lewis and Leonard Rosenblum. New York: Plenum.
- Izard, Carroll E., and Sandra Buechler. 1979. "Emotion Expressions and Personality Integration in Infancy." Pp. 447–72 in *Emotions in Personality and Psychopathology*, edited by Carroll E. Izard. New York: Plenum.
- James, William. 1893. *Principles of Psychology*. New York: Holt.
- Kadish, Bill. 1983. "Personality Traits and the Norepinephrine to Epinephrine Ratio." Senior Doctoral Thesis, Department of Psychiatry, Yale University School of Medicine.
- Kemper, Theodore D. 1978. *A Social Interactional Theory of Emotions*. New York: Wiley.
- . 1981. "Social Constructionist and Positivist Approaches to the Sociology of Emotions." *American Journal of Sociology* 87:336–62.
- . 1984. "Power, Status, and Emotions: A Sociological Contribution to a Psychophysiological Domain." Pp. 369–83 in *Approaches to Emotion*, edited by Klaus R. Scherer and Paul Ekman. Hillsdale, N.J.: Erlbaum.
- Kotsch, William E., David W. Gerbing, and Lynne E. Schwartz. 1982. "The Construct Validity of the Differential Emotions Scale as Adapted for Children." Pp. 251–78 in *Measuring Emotions in Infants and Children*, edited by Carroll E. Izard. Cambridge: Cambridge University Press.
- Lazarus, Richard S., and James R. Averill. 1972. "Emotion and Cognition: With Special Reference to Anxiety." Pp. 3–37 in *Anxiety: Current Trends in Theory and Research*, vol. 2. Edited by Charles D. Spielberger. New York: Academic.
- Levi, Lennart. 1972. "Sympathoadrenomedullary Responses to 'Pleasant' and 'Unpleasant' Psychosocial Stimuli." Pp. 55–73 in *Stress and Distress in Response to Psychosocial Stimuli: Laboratory and Real Life Studies in Sympathoadrenomedullary and Related Reactions*, edited by Lennart Levi. Supplement 528 to *Acta Medica Scandinavica*. Stockholm: Almqvist and Wiksell.
- Levy, Robert L. 1973. *The Tahitians: Mind and Experience in the Society Islands*. Chicago: University of Chicago Press.
- Lewis, Helen B. 1971. *Shame and Guilt in Neurosis*. New York: International Universities.
- Lewis, Michael, and Leonard Rosenblum. 1978. *The Development of Affect*. New York: Plenum.
- Lutz, Catherine. 1982. "The Domain of Emotion Words on Ifaluk." *American Ethnologist* 9:113–28.
- McCoy, Charles L., and John C. Masters. 1985. "The Development of Children's Strategies for the Social Control of Emotions." *Child Development* 56:1214–22.
- Malatesta, Carol Z. 1981. "Infant Emotion and Vocal Affect Lexicon." *Motivation and Emotion* 5:1–23.
- . 1985. "Developmental Course of Emotion Expression in the Human Infant." Pp. 183–219 in *The Development of Expressive Behavior: Biology-Environment Interactions*, edited by G. Zivin. New York: Academic.
- Malatesta, Carol Z., and Jeanette M. Haviland. 1982. "Learning Display Rules: The Socialization of Emotion Expression in Infancy." *Child Development* 53:991–1003.
- Mandler, George. 1975. *Mind and Emotion*. New York: Wiley.

- Manstead, Anthony S. R., and H. L. Wagner. 1981. "Arousal, Cognition, and Emotion: An Appraisal of Two-Factor Theory." *Current Psychological Reviews* 1:34–54.
- Marshall, Gary D., and Philip G. Zimbardo. 1979. "Affective Consequences of Inadequately Explained Physiological Arousal." *Journal of Personality and Social Psychology* 37:970–88.
- Maslach, Christina. 1979. "Negative Emotional Biasing of Unexplained Arousal." *Journal of Personality and Social Psychology* 37:953–69.
- Mazur, Allan. 1985. "A Biosocial Model of Status in Face-to-Face Primate Groups." *Social Forces* 64:377–402.
- Mazur, Allan, and Leon Robertson. 1972. *Biology and Social Behavior*. New York: Free Press.
- Mosher, Donald B., and Barbara B. White. 1981. "On Differentiating Shame and Shyness." *Motivation and Emotion* 5:61–74.
- Mowrer, O. Hobart. 1960. *Learning Theory and Behavior*. New York: Wiley.
- Obrist, Paul A. 1976. "The Cardiovascular-Behavioral Interaction—As It Appears Today." *Psychophysiology* 13:95–107.
- Osgood, Charles E. 1966. "Dimensionality of the Semantic Space for Communication via Facial Expressions." *Scandinavian Journal of Psychology* 7:1–30.
- Panksepp, Jaak. 1982. "Toward a General Psychobiological Theory of Emotions." *Behavioral and Brain Sciences* 5:407–67.
- Parkinson, Brian. 1985. "Emotional Effects of False Autonomic Feedback." *Psychological Bulletin* 98:471–94.
- Pennebaker, James W. 1982. *The Psychology of Physical Symptoms*. New York: Springer-Verlag.
- Piaget, Jean. 1962. *Play, Dreams, and Imitation in Childhood*. New York: Norton.
- Piers, Gerhart, and Milton B. Singer. 1953. *Shame and Guilt: A Psychoanalytic and Cultural Study*. Springfield, Ill.: Thomas.
- Plutchik, Robert. 1962. *The Emotions: Facts, Theories and a New Model*. New York: Random House.
- . 1980. *Emotion: A Psychoevolutionary Synthesis*. New York: Harper & Row.
- Plutchik, Robert, and Albert F. Ax. 1967. "A Critique of 'Determinants of Emotional State' by Schachter and Singer." *Psychophysiology* 4:79–82.
- Pribram, Karl H. 1980. "The Biology of Emotions and Other Feelings." Pp. 245–70 in *Emotion: Theory, Research, and Experience*, vol. 1. Edited by Robert Plutchik and Henry Kellerman. New York: Springer-Verlag.
- Price, John S. 1967. "The Dominance Hierarchy and the Evolution of Mental Illness." *Lancet* 2:243–46.
- Redican, William K. 1982. "An Evolutionary Perspective on Human Facial Displays." Pp. 212–80 in *Emotion in the Human Face*, 2d ed. Edited by Paul Ekman. Cambridge: Cambridge University Press.
- Reisenzein, Rainer. 1983. "The Schachter Theory of Emotion: Two Decades Later." *Psychological Bulletin* 94:239–64.
- Ridgeway, Doreen, Everett Waters, and Stan A. Kuczaj, II. 1985. "Acquisition of Emotion-Descriptive Language: Receptive and Productive Vocabulary Norms for Ages 18 Months to 6 Years." *Developmental Psychology* 21:901–08.
- Rossi, Alice. 1984. "The Presidential Address: Gender and Parenthood." *American Sociological Review* 49:1–18.
- Schachter, Joseph. 1957. "Pain, Fear, and Anger in Hypertensives and Normotensives: A Psychological Study." *Psychosomatic Medicine* 19:19–29.
- Schachter, Stanley, and Jerome Singer. 1962. "Cognitive, Social and Physiological Determinants of Emotional State." *Psychological Review* 69:379–99.
- Scheff, Thomas J. 1979. *Catharsis in Healing, Ritual, and Drama*. Berkeley and Los Angeles: University of California Press.

- . 1986. "Micro-Linguistics and Social Structure: A Theory of Social Action." *Sociological Theory* 4:71–83.
- Scherer, Klaus, R., Angela B. Summerfield, and Harald G. Wallbott. 1983. "Cross-National Research on Antecedents and Components of Emotion: A Progress Report." *Social Science Information* 22:355–85.
- Scott, John P. 1980. "The Function of Emotions in Behavioral Systems: A Systems Theory Analysis." Pp. 35–56 in *Emotion: Theory, Research, and Experience*, vol. 1. Edited by Robert Plutchik and Henry Kellerman. New York: Academic.
- Sears, Robert R., Eleanor E. Maccoby, and Harry Levin. 1957. *Patterns of Childrearing*. New York: Harper.
- Shaver, Phillip, and Mary Klinnert. 1982. "Schachter's Theories of Affiliation and Emotion: Implications of Developmental Research." Pp. 37–72 in *Review of Personality and Social Psychology*, vol. 3. Edited by Ladd Wheeler. Beverly Hills, Calif.: Sage.
- Shaver, Phillip, and Judith C. Schwartz. 1984. "Prototypes and Examples of Fear, Sadness, Anger, Happiness, and Love." Paper presented at Society of Experimental Social Psychology Meetings, Snowbird, Utah.
- Shott, Susan. 1979. "Emotion and Social Life: A Symbolic Interactionist Analysis." *American Journal of Sociology* 84:1317–34.
- Sroufe, L. Alan. 1979. "Socioemotional Development." Pp. 462–516 in *Handbook of Infant Development*, edited by Joy D. Osofsky. New York: Wiley.
- Stanley-Jones, D. 1970. "The Biological Origins of Love and Hate." Pp. 25–37 in *Feelings and Emotions: The Loyola Symposium on Feelings and Emotions*, edited by Magda B. Arnold. New York: Academic.
- Stein, M. 1967. "Some Psychophysiological Considerations of the Relationship between the Autonomic Nervous System and Behavior." Pp. 145–54 in *Neurophysiology and Emotion*, edited by David C. Glass. New York: Rockefeller University Press and Russell Sage Foundation.
- Stipek, Deborah J. 1983. "A Developmental Analysis of Pride and Shame." *Human Development* 26:42–54.
- Strand, Fleur L. 1983. *Physiology: A Regulatory Systems Approach*, 2d ed. New York: Macmillan.
- Stryker, Sheldon, and Anne Statham. 1985. "Symbolic Interaction and Role Theory." Pp. 311–78 in *The Handbook of Social Psychology*, vol. 1. 3d ed. Edited by Gardner Lindzey and Elliot Aronson. New York: Random House.
- Thoits, Peggy. 1984. "Stress, Coping, Social Support, and Psychological Outcomes: Emotional Process." Pp. 219–38 in *Review of Personality and Social Psychology*, vol. 5. Edited by Phillip Shaver. Beverly Hills, Calif.: Sage.
- Tomkins, Sylvan S. 1962. *Affect, Imagery, Consciousness*, vol. 1. New York: Springer.
- . 1963. *Affect, Imagery, Consciousness*, vol. 2. New York: Springer.
- . 1982. "Affect Theory." Pp. 353–95 in *Emotion in the Human Face*, 2d ed. Edited by Paul Ekman. Cambridge: Cambridge University Press.
- Trevarthen, Colwyn. 1984. "Emotions in Infancy: Regulators of Contact and Relationship with Persons." Pp. 129–57 in *Approaches to Emotion*, edited by Klaus R. Scherer and Paul Ekman. Hillsdale, N.J.: Erlbaum.
- Unger, J. M. 1962. "On the Development of Guilt Reactivity in the Child." Doctoral Paper, Cornell University.
- Vingerhoets, A. J. J. M. 1984. "The Role of the Parasympathetics in Stress and Emotion." Manuscript, Department of Psychology, University of Nijmegen.
- Weerts, T. C., and R. Roberts. 1976. "The Physiological Effect of Imagining Anger-Provoking and Fear-Provoking Scenes." *Psychophysiology* (Abstr.) 13:174.