

# Expression and the Course of Life

## Studies of Emotion, Personality, and Psychopathology from a Social-Functional Perspective

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**ABSTRACT:** In this paper I discuss how expressive behavior relates to personality and psychopathology, integrating recent findings from my laboratory and the insights of Charles Darwin on this topic. In the first part of the paper I challenge the view, in part espoused by Darwin, that humans are equipped to convey only a limited number of emotions with nonverbal behavior. Our lab has documented displays for several emotions, including embarrassment, love, desire, compassion, gratitude, and awe, to name just a few states that previously were thought not to possess a distinct display. I then present an argument for how individual differences in emotion, although fleeting, shape the social environment. This argument focuses on the functions of nonverbal display: to provide information to others, to evoke responses, and to serve as incentives of preceding or ensuing social behavior. This reasoning sets the stage for the study of the relationships between personality, psychopathology, and expressive behavior, to which I turn in the final part of the paper. Here I show that basic personality traits (e.g., extraversion, agreeableness) and psychological disorders (e.g., externalizing disorder in children, autism) have expressive signatures that shape social interactions and environments in profound ways that might perpetuate and transmit the trait or disorder.

**KEYWORDS:** facial expression; personality; psychopathology; emotion; social interaction; course of life

*In every asylum we find examples of absolutely  
unmotivated fear, anger, melancholy, or conceit;  
and others of equally unmotivated apathy  
which persists in spite of the best outward  
reasons why it should give way.*

—WILLIAM JAMES, 1890

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Does facial expression tell us about personality and psychopathology? William James thought so, as suggested by the quotation above. So did Charles Darwin.<sup>1</sup> Darwin observed, “The insane ought to be studied, as they are liable to the strongest passions” (p.20).<sup>1</sup> In the Victorian England of Darwin’s time, the unregulated emotions of the insane provided rich examples of the universal expressions that he sought and so successfully described. In a more tacit fashion, Darwin’s accounts of the expressive behavior of the insane intimated the importance of emotional expression in social life—a theme central to this chapter.

In Darwin’s eyes there were pathological excesses of expressed emotion. For example, in several places, quoted below, Darwin described what appear to be individuals suffering from depression:

In one of these (a case of hypochondria), a widow, aged 51, fancied that she had lost all her viscera, and that her whole body was empty. She wore an expression of great distress and beat her semi-closed hands rhythmically together for hours. The grief muscles were permanently contracted and the upper eyelids arched. This condition lasted for months, then she recovered, and her countenance resumed its natural expression [p. 184].<sup>1</sup>

Nothing is more characteristic of simple melancholia, even in the male sex, than a tendency to weep on the slightest occasion, or from no cause [p. 157].<sup>1</sup>

The depression of the corners (of the mouth) may often be seen ... with the melancholic insane, and was well exhibited in ... patients with a strong tendency to suicide [p. 191].<sup>1</sup>

Here we encounter remarkable possibilities: facial expressions of sadness (i.e., “grief muscles”) lasting for extended periods of times, perhaps even months; weeping for no reason; expressive behavior revealing depressed states of mind and the predilection to suicide.

Darwin also took note of individuals whose absence of emotion was equally revealing of the individual’s mental condition. He noted that “idiots” rarely blush (p. 311),<sup>1</sup> no doubt a sign of their inability to abide by societal norms and morals. Elsewhere Darwin wrote: “Many idiots are morose, passionate, restless, in a painful state of mind, or utterly stolid, and these never laugh [p. 196].” In these cases, the relative absence of expression—blushing or laughing—is just as dysfunctional, and a sign of the individual’s inability to participate in normal life.

Underlying these astute observations is the notion that a person’s functioning in life is revealed in specific patterns of expressive behavior, in telling cues to a person’s state of mind and character. What evidence is there for this provocative thesis? As with many of Darwin’s prescient observations, the answers offered by empirical science have only recently begun to emerge. In this article, I consider some of those answers by reviewing recent findings concerning individual differences in facial expression. At stake are several significant opportunities for researchers, which I first discuss. I then turn to a

social-functional account of emotions, which argues that emotions evolved to promote and maintain important relationships. Within this perspective, emotional expression coordinates social interactions and should therefore be an important contributor to the individual's adjustment and functioning. With this reasoning as backdrop, I then review four kinds of evidence that indicate that facial expression is revealing of the life course, the life that the individual has led and is likely to continue leading.

### **BENEFITS TO THE STUDY OF INDIVIDUAL DIFFERENCES IN EXPRESSION**

It is only in the last 20 years that empirical science has begun to address systematically individual differences in expressive behavior. The reasons for this are several. Reliable methods for measuring facial expression, most notably the Facial Action Coding System (FACS),<sup>2</sup> were developed only quite recently. It is somewhat counterintuitive, if not methodologically ill advised (and counter to principles of statistical aggregation), to expect brief observations of facial behavior to predict cumulative life outcomes. The constructs themselves—facial expression, personality traits, and psychological disorders—are different in important ways: emotion refers to that which is transient, specific, situationally specific; personality traits and disorders refer to what are stable, broad, cross-situationally consistent, and idiosyncratic. The notion that certain facial muscle actions would be telling of individual character might have struck some psychologists as perilously close to phrenology. Some social scientists have argued that facial expression provide little coherent information about an individual's emotion, intentions, and dispositions (for review of these and contrary views see Keltner & Ekman<sup>3</sup>).

Yet the benefits of studying the relations between expression and individual differences in personality, or psychopathology, are significant—if not essential—to certain inquiries in the field of emotion. The study of individual differences, in this case in expression and personality, is one method for gathering evidence relevant to functional claims about emotion.<sup>4</sup> For example, in a later section we shall see that people who display little embarrassment or inappropriately timed embarrassment have pronounced difficulties abiding by social norms and morals. This kind of finding is consistent with the notion that one function of embarrassment is to motivate the adherence to social norms and morals.<sup>5</sup> Studies linking individual variation in facial expression to specific outcomes, therefore, lend credence to claims about the particular functions of an emotion.

For those guided by more applied or clinical concerns, studies of individual differences in facial expression are equally informative. Careful analysis of the emotional dynamics of different disorders can help refine the character-

ization and classification of disorders. For example, it has long been believed that schizophrenia is marked by the relative absence of facial expression. Researchers have only recently sought to empirically test these observations, initially offered by Bleuler and Kraepelin. Kring and colleagues have documented that schizophrenia patients show fewer facial expressions of positive and negative emotions in response to emotionally evocative material when compared to nonpatients, but report comparable experiences of emotion.<sup>6</sup> Interventions that help patients better match their feelings with their outward displays may therefore have positive effects on interpersonal adjustment. To the extent that there prove to be fairly specific expressive markers of a particular disorder—for example, reduced embarrassment with autism<sup>7</sup>—researchers might be better able to identify individuals prone to the disorder earlier in development. Most generally then, studies of emotional expression and psychological disorder will help refine the classification, understanding, and treatment of individuals with different disorders. These gains made by studying individual differences in expression are brought into clearer focus by a social-functional account of emotion.

### A SOCIAL-FUNCTIONAL APPROACH TO EMOTION

Humans are profoundly social. We raise offspring, gather resources, mete out justice, work, play, and celebrate in relationships. Our well-being depends on the quality of those relationships more so than on material success.<sup>8</sup> Human relationships are complex and highly differentiated, with their own rules, morals, modes of allocation, accompanying cognitive processes, and functions.<sup>9</sup>

Within the field of emotion, there is a certain irony. Many empirical studies have focused on the intrapersonal processes related to emotion, including emotion-related appraisal,<sup>10</sup> the structure of emotional experience,<sup>11</sup> the effects of emotion upon reasoning,<sup>12</sup> and emotion-specific central and autonomic nervous system physiology.<sup>13</sup> At the same time, there is an increasing consensus that emotions were designed—by evolution or social construction, depending on one's theoretical persuasion—to solve certain problems of human social life.<sup>10,14–18</sup> This view holds that emotions are elicited by problems and opportunities within important social relationships: for example, slights to one's reputation trigger anger or shame, the distress of vulnerable individuals triggers compassion, cues of beauty or sexual receptivity trigger romantic love or desire. Emotions, once elicited, trigger patterns of cognition and action that prompt the individual to avert or reduce the problems or take advantage of the opportunities within ongoing interactions.<sup>12,19</sup>

TABLE 1 presents a social-functional analysis of some emotions.<sup>16,17,20</sup> In TABLE 1, I identify three broad classes of problems and opportunities related

**TABLE 1. Taxonomy of problems and the functional systems and emotions that solve them**

Problem	Functional systems	Emotions	Specific functions
<i>Problems of physical survival</i>			
Predation	fight-flight	fear	avoidance of threat to self
		rage	removal of threat to self
Disease	food selection	disgust	avoid microbes/ parasites
<i>Problems of reproduction</i>			
Finding a mate	attachment	desire	increase sexual contact
		romantic love	commit to long-term bond
		sadness	replace loss of mate
Keeping mate	mate protection	jealousy	protect mate from rivals
Protecting vulnerable children	caregiving	filial love	increase filial bond
		sympathy	reduce distress of vulner- able individuals
<i>Problems of group governance</i>			
Cooperation and defection	reciprocal altruism	guilt	repair own transgression
		moral anger	motivate other to repair transgression
		gratitude	reward cooperative bond
		envy	reduce unfair differences in equality
Group organization	dominance-submis- siveness	shame and embarrassment	pacify likely aggressor
		contempt	reduce status of other
		awe	endow other with status

to human reproduction and survival, and functions that specific emotions serve related to these problems.

Certain emotions help solve the *problems of physical survival*, including avoiding death by predation, violence, and disease. Fear helps individuals avoid death by predation or other physical attacks, in part through amygdala-based automatic processing of sensory information<sup>21</sup> and activity of the hypothalamic-pituitary-adrenocortical axis, which readies the organism for fight or flight. Prototypical fear can be seen as the heart of a system that in-

cludes a variety of cognitive and behavioral mechanisms that make it more effective—for example, vicarious learning and the preparedness of animal phobias.<sup>22</sup>

Disgust—along with its simpler precursor, distaste—can similarly be seen at the heart of the “food-selection” system,<sup>23</sup> which helps humans choose a balanced and safe diet. In humans, food rejections are not based primarily on the sensory properties of the object, but rather on a knowledge of what it is or what it has touched.<sup>24</sup> The food selection system is further expanded by the addition of learning mechanisms, such as one-trial learning for nausea-inducing foods;<sup>25</sup> and by cultural mechanisms, such as cuisine, which marks prepared foods with a reassuringly familiar blend of spices or flavors.<sup>26</sup>

Evolutionary and attachment theorists have speculated on how a variety of emotions solve the *problems of reproduction*, which include procreation and the raising of offspring to the age of reproduction. Romantic love and desire facilitate the identification, establishment, and maintenance of reproductive relations. These emotions involve appraisals, perceptions, and experiences that are sensitive to cues related to potential mate value. These include beauty, fertility, chastity, social status, and character;<sup>27</sup> expressive behaviors that signal interest and commitment,<sup>28,29</sup> and evoke desire and love; and hormonal and autonomic responses that facilitate sexual behavior.<sup>29</sup>

Other emotions are sensitive to threats or disruptions to reproductive relationships. Sadness follows the loss of important bonds and helps individuals establish new bonds (for an analysis of grief, see Lazarus<sup>10</sup>). Jealousy relates to mate protection, and is triggered by cues that signal potential threats to the relationship, such as possible sexual or emotional involvement of the mate with others.<sup>27</sup> Jealousy motivates possessive and threat behaviors that discourage competitors and prevent sexual opportunities for the mate.<sup>30</sup> And caregiving-related emotions of parental and child love and sympathy facilitate protective relations between parent and offspring,<sup>31,32</sup> which are especially important for mammalian neonates, who are dependent and vulnerable to predation for much longer periods of time than nonmammalian species.

Finally, emotions help solve *problems related to group governance and allocation of resources and work*.<sup>33</sup> To avoid the problems of cheating and to encourage cooperation, in particular among nonkin, humans reciprocate cooperative and noncooperative acts.<sup>34</sup> Reciprocity is a universal social norm and is evident in gift giving, eye-for-an-eye punishment, *quid-pro-quo* behavior in other species,<sup>35</sup> and the “tit-for-tat” strategy.<sup>36</sup> Several emotions signal when reciprocity has been violated and motivate reparative behavior.<sup>28,34,35,37</sup> Guilt occurs following violations of reciprocity and is expressed in apologetic, remedial behavior that reestablishes reciprocity.<sup>38,39</sup> Moral anger motivates the punishment of individuals who have violated rules of reciprocity. Gratitude for altruistic acts is a reward for adherence to the contract of reciprocity.<sup>34</sup> Envy motivates individuals to derogate others whose favorable status is unjustified, thus preserving equal relations.<sup>9</sup>

Humans must also solve the *problem of group organization*. Status hierarchies provide heuristic solutions to the problems of distributing resources, such as mates, food, and social attention, and the labor required of collective endeavors.<sup>9,40,41</sup> The establishment, maintenance, and preservation of status hierarchies is accomplished in part by emotions related to dominance and submission.<sup>17,42</sup> Embarrassment and shame appease dominant individuals and signal submissiveness,<sup>5,43</sup> whereas contempt is defined by feelings of superiority and dominance vis-à-vis inferior others. Awe tends to be associated with the experience of being in the presence of an entity greater than the self<sup>44</sup> and thereby endows higher-status individuals with respect and authority.

### EXPRESSION AND THE COORDINATION OF SOCIAL INTERACTION

Many of the aforementioned problems arise in brief, rapidly changing, interdependent social interactions: a threatening figure approaches one's offspring; in a group of young adults a potential romantic partner shows slight signs of interest; within a group a subordinate member intimates at the inappropriate status of a higher-status individual. These kinds of events arise quickly and present opportunities and problems related to important relationships, such as romantic bonds or social hierarchies. According to social-functional accounts of emotion,<sup>45</sup> emotional expression coordinates social interactions in ways that meet these problems and opportunities, maintaining the stability of social bonds. Facial expressions do this through their informative, evocative, and incentive functions.<sup>46</sup>

First, emotional experience and expression are sources of information about the social world—the informative function. Emotion displays convey information about the sender's emotions, intentions, and relationship with the target.<sup>47</sup> Emotion displays convey information about the environment external to the relationship as well, allowing individuals to coordinate their responses to outside opportunities or threats.<sup>48,49</sup>

Second, emotion displays have evocative functions, eliciting complementary or matching emotions from relationship partners.<sup>46,50</sup> For example, photographed facial displays of anger enhance fear conditioning in observers, even when the photographs are not consciously perceived.<sup>51,52</sup> Several studies have also shown that expressions of distress evoke compassion or sympathy in observers.<sup>53</sup>

Finally, emotion displays provide incentives for desired social behavior.<sup>46</sup> Displays of positive emotion are often used by parents to reward desired behaviors in children, thus increasing the probability of those behaviors in the future.<sup>54</sup> Laughter from interaction partners also rewards desirable social behavior in adults.<sup>55</sup>

Starting from a social functional analysis has helped guide the discovery of how expressions shape interactions. This approach has also led to the discovery of displays of emotions not considered in a first wave of research on expression, which focused on anger, contempt, disgust, fear, happiness, sadness, and surprise.<sup>47</sup> Embarrassment is marked by a sequence of gaze aversion, controlled smile, head turn (which exposes the neck), and occasional face touch (in other studies, just the face touch is sufficient to communicate embarrassment),<sup>56</sup> whereas shame is displayed in a coordinated sequence of downward gaze and head movements lasting 1 to 5 seconds.<sup>43,57,58</sup> Unpublished studies are finding a distinct display of pride, as evident in postural expansion and upwards head and gaze movements.<sup>59</sup> At least three self-conscious emotions appear to have distinct displays.

In the realm of positive emotions, the momentary experience of love is expressed in a coherent pattern of smiling, mutual gaze, affiliative hand gestures, open posture, and forward leans.<sup>29</sup> Desire is signaled in a variety of lip-related actions, including lip licks, wipes, and tongue protrusions.<sup>29</sup> Laughter and smiling have distinct experiential correlates and social consequences.<sup>60,61</sup> At least five positive states, then—love, desire, amusement, happiness, and interest<sup>62</sup>—have distinct displays. In unpublished research, we have shown that awe and gratitude, in this case posed rather than experienced, have distinct actions.<sup>59</sup> And a display of sympathy—namely oblique eyebrows and concerned gaze—is correlated with increased sympathy, heart rate deceleration, and increased helping behavior; this display is different from that of distress.<sup>53</sup>

A social functional account of emotion, therefore, posits that emotions help individuals form and maintain relationships that are essential to the survival and well-being of individuals, relationships, and groups. Emotional expression, in particular, coordinates moment-by-moment interactions between individuals as they respond to the challenges and opportunities that make or break social bonds. Facial expressions signal commitment to romantic partners, appease observers, and prompt well-timed forgiveness; they promote reciprocity. This perspective has led to the study of previously ignored emotions, such as love<sup>29</sup> and awe,<sup>44</sup> and to the discovery of new displays. And this perspective sheds light on the significance of individual differences in emotion.

### INDIVIDUAL DIFFERENCES IN EMOTION AND THE SHAPING OF THE LIFE CONTEXT

One of the lasting insights of the study of individual differences is that all situations are not created equal. More concretely, people, as a function of their personality or psychological disorder, create the situations in which they act.<sup>63</sup> Individuals selectively attend to certain features of complex situations,



thus endowing contexts with particular, idiosyncratic meaning. Individuals evoke responses in others, thus shaping the social meaning of the situation. In this fashion, across situations individuals will tend to respond and act in a similar fashion, thus expressing their underlying traits and dispositions in a stable fashion. And across the life course, individuals will create certain motifs, themes, and relationship patterns that reveal the particular facets of individual identity.

Emotion is one important part of the way individuals shape their life context.<sup>64</sup> Current evidence points to two specific processes by which this occurs. First, individual differences in emotion lead individuals to selectively construe situations in different fashions. Each emotion is defined by a certain appraisal theme,<sup>10,65,66</sup> which defines in part how the individual will construe any particular situation. Anxious individuals perceive more threat and risk in situations, whereas anger-prone individuals perceive less risk and threat, as do cheerful individuals.<sup>12</sup>

Second, individuals tend to consistently evoke different responses in others. Individuals will evoke different responses in strangers and intimates, at home and at work, as a function of their tendency to express particular emotions. One implication is that in relationships individuals will tend to converge, or become more similar, in their emotional style. Other people come to take on our emotional tendencies, and we take on theirs.

In an investigation of this latter idea, we explored the emotional similarity of romantic partners, roommates, and strangers.<sup>67</sup> To the extent that individual differences in emotion evoke consistent responses in others, individuals in relationships should come to resemble one another in their emotional style. TABLE 2 reveals that this is true across relationships.

**TABLE 2. Emotional convergence in close relationships**

Subjects	Time 1	Time 2	Change
Romantic partners			
Positive	.32*	.51*	.23*
Negative	.43*	.61*	.31*
Roommates (together)			
Positive	.19	.47*	.31*
Negative	.05	.38**	.34*
Roommates (separately)			
Positive	.26*		
Negative	.35*		
Random dyads			
Positive	-.05		
Negative	-.24		

\* $P < 0.05$ ; \*\* $P < 0.10$ .

Specifically, in our first two studies we assessed romantic partners' and roommates' emotional responses to the same stimuli (e.g., emotional conversations, embarrassing tasks) at the beginning and end of an academic year. As one can see, romantic partners and roommates became more similar to one another in their emotional response styles over the course of the year.

These initial findings raised an intriguing question: would this emotional convergence be evident when participants were not in the presence of their romantic partner or roommate? The final set of findings in TABLE 2 answers in the affirmative. In this study roommates watched the same film clips, but in different rooms. Here again we see convergence in emotional style: roommates responded emotionally to the clips in similar fashion, but the responses of randomly paired individuals (whose findings are represented in the final two rows) did not resemble one another. The responses relationship partners evoke and shape in one another generalize to contexts in which they are not with one another.

Through these selective and evocative processes, individuals create life contexts and cumulative life outcomes. Facial expression, therefore, should be particularly revealing. More specifically, facial expressions reflect different experiences,<sup>68</sup> patterns of appraisal,<sup>69</sup> and patterns of autonomic nervous system activity.<sup>13</sup> In this fashion, facial expression reveals how the individual selectively interprets and reacts to important life events. Facial expression should also reveal the responses the individual evokes in others and, by implication, patterns of relating to others. Although fleeting and often beyond control, facial expressions appear to be measurable signs of the course of life; indeed, they are windows into the human soul.

My own research has explored ramifications of this general thesis in four different ways. First, I have looked at significant life events that have enduring, if not life-transforming, effects upon the individual. In particular, with George Bonanno I have studied individual variation in emotional expression in response to bereavement, which has profound effects upon social functioning and well-being. Here I have tested specific hypotheses derived from emotion research about how expression reflects individuals' adaptive responses to these events.

In a second line of research I have looked at how expression reflects patterns of adjustment in enduring personal relationships. Again, the reasoning is similar: facial expressions, I have argued, contribute to the stability and well-being of interpersonal bonds. In my own research I have tested specific hypotheses relating displays of romantic love to commitment-enhancing processes within heterosexual bonds.

A third line of evidence pertains to the core of Darwin's original interest, summarized earlier—the connection between facial expression and mental health and disorder. I have focused on embarrassment, a social-moral emotion that reflects the individual's commitment to norms and morals. The evidence indicates that individuals who display little or inappropriate

embarrassment have serious difficulties with abiding by the rules that contribute to effective social functioning.

Finally, I have asked whether expression is revealing of the course of life, of how people change and develop, and of the relationships they lead.

### EXPRESSION AS THE REGISTER OF SIGNIFICANT LIFE EVENTS

How might facial expressions relate to individual adjustment in response to one of life's most devastating losses—the early death of a spouse? Traditional bereavement theories offer clear predictions. These theories, based on Freudian notions of “working through” the emotional pain of loss, hypothesize that recovery depends on the expression of negative emotions, such as anger and sadness. The expression of positive emotion, from this perspective, indicates denial and impedes grief resolution. Social-functional accounts of emotion, in contrast, suggest that negative emotional expression may bring about problematic outcomes, whereas positive emotional expression may facilitate the adaptive response to stress.

We pitted these contrasting hypotheses against one another in a longitudinal study of midlife conjugal bereavement.<sup>70</sup> Bereaved adults' facial expressions were coded using Ekman and Friesen's Facial Action Coding System<sup>2</sup> as they talked for six minutes in highly moving and emotional ways about their recently deceased spouse. We related measures of participants' facial expressions of emotions to a well-validated measure of grief severity, gathered in independent interviews at 6, 14, and 25 months postloss. Contrary to widespread assumptions, measures of participants' facial expressions of negative emotion—in particular, anger—predicted *increased* grief severity at 14 and 25 months postloss. Measures of laughter and smiling, in contrast, predicted *reduced* grief over time. Importantly, facial expressions predicted long-term adjustment independent of initial grief and the tendency to report high levels of distress.

These findings raised an intriguing question. Why would laughing while talking about the deceased partner relate to increased personal adjustment? Recent theorizing about the functions of positive emotion points to possible answers.<sup>71</sup> Specifically, positive emotions are believed to accompany the “undoing” of distress, or what we will call *dissociation* from the distress of stressful events, and to enhance social bonds. Clearly, dissociation from distress and enhanced bonds would help the bereaved individual adjust to a profoundly changed life following the loss of a spouse.

To assess these putative functions of positive emotion, we divided our bereaved participants into two groups: those who showed Duchenne laughter, which involves the action of the orbicularis oculi muscle<sup>47,72</sup> and those who did not. We then compared the two groups on three measures: (1) a well-

**TABLE 3. Qualities of bereavement for laughers and nonlaughers**

Quality	Laughers	Nonlaughers
Verbal-autonomic dissociation	-0.60	0.43
Satisfaction with spouse	114.10	102.06
Ambivalence in current relation	3.05	3.49
Positive reaction from strangers	0.78	0.34

validated index of emotional dissociation (the discrepancy between self-reports of distress and autonomic reactivity gathered during the bereavement interview); (2) their ambivalence towards a current significant other; and (3) the responses they evoked in strangers, who viewed videotapes of the participants with no sound. Consistent with theorizing about positive emotion, bereaved individuals who laughed while talking about their deceased spouse showed a pattern of dissociation from distress, reported better relations with a current significant other, and evoked more positive responses in strangers (see TABLE 3). Laughers and nonlaughers did not differ in their self-rated personality or in the nature of their spouse's death (e.g., its unexpectedness or financial impact), which might have accounted for variation in the outcome measures of interest.

### EXPRESSION AND INTERPERSONAL RELATIONSHIPS

Facial expressions, I argued earlier, coordinate social interactions by providing information to others, evoking responses, and serving as incentives for social behavior. Indeed, facial expressions are essential elements of interactions, such as attachment processes, flirtation, status rituals, and appeasement, that are crucial to human relationships.<sup>50</sup> Individual differences in facial expressions of emotion, therefore, should relate to different levels of adjustment in interpersonal relationships.

Researchers have examined the contribution of emotional expression to problems in interpersonal adjustment. For example, Field and colleagues have shown that mothers with depression express little positive emotion, and that this relative lack of expression is linked with increased anxiety, distress, and disengagement in the child.<sup>73</sup> It is easy to imagine how the mother's lack of positive emotion, a hallmark of depression, contributes to the anxious, disengaged bond between mother and child in this case. More generally, this emotional disturbance in depression is inexorably linked to the well-documented difficulties depressed individuals have in interpersonal relationships.

In studies that perhaps best illustrate the theme of this section—how expression indexes the quality of interpersonal bonds—John Gottman and

Robert Levenson have studied extensively the emotional dynamics of romantic partners. In their work romantic partners visit the laboratory after having not seen each other for the past 24 hours and engage in a variety of conversations about the very substance of intimate bonds—the events of the day, issues of conflict, and so on. Two kinds of expressive style are particularly toxic to romantic bonds: partners' expressions of contempt and wives' expressions of disgust during conversations about conflict predict relationship dissatisfaction and dissolution.<sup>74</sup>

Motivated by a social-functional account of emotion, we asked whether positive emotional behaviors predict commitment and satisfaction in romantic bonds.<sup>29</sup> Following ethological studies of humans and nonhumans, we coded the affiliative and sexual cues displayed by romantic partners as they talked together about a recent positive event. Romantic partners' affiliative cues, which included Duchenne smiles, forward leans, head nods, and open hand gestures, uniquely correlated with self-reports of love. Sexual cues, including lip licks, lip wipes, and tongue protrusions, uniquely correlated with self-reports of desire. This preliminary evidence suggests that there are displays of love and desire.

We then asked whether these facial signs predict different relationship qualities within intimate bonds. We had hypothesized that romantic love serves a commitment function, motivating long-term commitment to a romantic partner. Consistent with this thesis, across two different samples, affiliation cues and self-reports of love gathered from one brief context (when partners were talking about a recent positive event) predicted self-reports of increased commitment, shared goals, playful teasing, constructive conflict resolution, and increased relationship satisfaction. We had hypothesized that desire serves a reproduction function, motivating sexual behavior. Consistent with this thesis, measures of sexual cues and self-reports of desire in one context predicted increased sexual satisfaction.

Taken together, these findings indicate that one can judge the health and disposition of intimate relationships from brief observations of expressive behavior. One can discern whether the relationship will last, its degree of commitment, and its sexual content.

## EXPRESSION AND PSYCHOLOGICAL DISORDERS

Thus far we have seen that expressive behavior predicts responses to significant life events and the quality of interpersonal relationships. In light of these findings, one would expect expressive behavior to be related to psychological disorders in a rather specific fashion.

Here there is more relevant evidence, and it suggests that different disorders are likely to be associated with different emotion profiles. We have al-

ready seen that schizophrenia is associated with relatively normal levels of experienced emotion but reduced expressive behavior. Select evidence indicates that depressed individuals tend to display less positive emotion.<sup>73</sup> Socially anxious individuals tend to report more fear and to display anxiety-like behaviors.<sup>75</sup> Clearly, this is a fruitful line of inquiry.

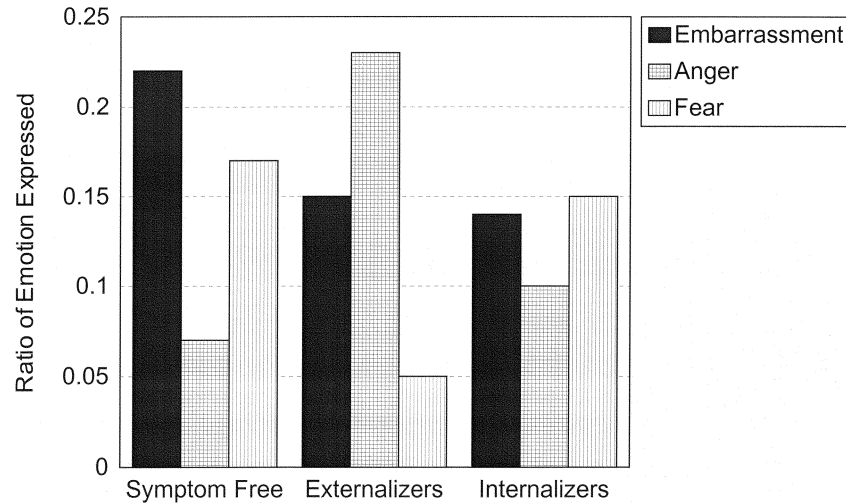
In my own research I have been interested in the particular disorders associated with deficits in the self-conscious emotions. It is widely claimed that individuals who are less inclined towards self-conscious emotions, such as embarrassment, shame, or guilt, are more prone to antisocial behavior. The rationale is rather simple: self-conscious emotions motivate the adherence to social norms and restorative interactions that follow norm violations. Individuals who experience and display little self-conscious emotion, by implication, should be more inclined to violate social norms and less likely to restore social relations following norm violations (e.g., in interpersonal conflict). Variants of this hypothesis were advanced long ago by Charles Darwin and Erving Goffman and are embedded in cultural conceptions of the “shameless” individual.

In a first test of this hypothesis about the regulatory function of self-conscious emotion, we coded the facial expressions, again using Ekman and Friesen’s Facial Action Coding System, that young boys displayed while taking a brief interactive IQ test.<sup>76</sup> We then related these measures of facial expression to teacher ratings of the boys’ levels of externalizing disorder—defined by aggression and delinquent behavior—and internalizing disorder—defined by anxiety, withdrawal, and somatic complaints. The IQ test produced frequent embarrassment, anger, and fear, as the boys made intellectual mistakes in front of an authority figure (one wonders what the effects of those emotions were on performance). As seen in FIGURE 1, the young boys who were most prone to antisocial behavior, the externalizers, displayed the least embarrassment (and the most anger), lending credence to the claim that embarrassment motivates socially normative behavior. Externalizing and internalizing disorders also appear to have different emotional cores.

In similarly motivated research, Beer and colleagues have looked at the self-conscious emotion of individuals with damage to the orbitofrontal region of the frontal lobes.<sup>77</sup> This brain region, which rests behind the eye orbits (i.e., Brodmann’s areas 11, 12, 14, and 47), seems particularly involved in the regulation of social behavior. Damage to the orbitofrontal region of the frontal lobes does not impair language, memory, or sensory processing; but it does appear to disrupt social regulation.

Orbitofrontal patients have been observed to greet strangers by kissing on the cheek and hugging,<sup>78</sup> engage in uncontrolled and tasteless social behavior such as inappropriate joking,<sup>79</sup> and make disclosures to a stranger in an inappropriately intimate fashion.<sup>77</sup>

In the study of interest, orbitofrontal patients and age-matched controls engaged in several tasks that generated self-conscious emotion. Two are of in-



**FIGURE 1.** Emotional expression and childhood psychopathology.

terest here. First, the subjects teased strangers (notably, two attractive young women), which allowed for the opportunity of inappropriate social behavior. Second, they were presented with slides of photographs of the basic emotions (anger, disgust, fear, happiness, sadness, and surprise) and the self-conscious emotions with known displays (embarrassment and shame) and asked to indicate the emotion being displayed in the photo.

As expected, our orbitofrontal patients clearly had difficulties with regulating their social behavior in the teasing task. They teased in overly forward ways that were not qualified by subtle apologies and paralinguistic acts that mitigate the provocativeness of the tease (e.g., hesitations). Turning to self-reports of emotion, both patients and controls found the teasing amusing; in fact that was the strongest emotion they reported feeling. They differed, however, in their experience of self-conscious emotion. Patients reported greater pride and reduced embarrassment compared to the controls, even though they teased in a more inappropriate fashion. These patients showed inappropriate self-conscious emotion—increased pride and reduced embarrassment—when engaging in socially inappropriate behavior. One interesting possibility is that this tendency towards inappropriate self-conscious emotion might actually reinforce rather than correct inappropriate social behavior.

In the emotion recognition task, we see another side to the deficit in self-conscious emotion associated with orbitofrontal damage. Specially, orbitofrontal patients and controls were equally capable of recognizing the “basic” facial expressions of anger, disgust, fear, happiness, surprise, and sadness. Where they differed was in their recognition of self-conscious emotions: the

patients, as one might expect, were not as reliable in labeling the displays of self-conscious emotion. They had trouble making accurate appraisals of others' self-conscious emotions. Together these findings suggest that self-conscious emotions and their underlying appraisal processes are important for the adaptive regulation of social behavior.

### EXPRESSION AND THE COURSE OF LIFE

Thus far we have seen that individual variation in facial expressions of emotion predicts responses to significant events, the quality of interpersonal bonds, and particular psychological disorders. With the exception of the bereavement study, the studies that supported these claims were snapshot studies of an individual's life. Brief periods of expressive behavior were shown to relate to contemporaneous measures of relationship quality and psychological functioning.

I have argued, however, that facial expressions should reveal the course of an individual's life.<sup>46,64</sup> Facial expressions reveal how individuals selectively interpret and create situations, and evoke responses in others. In these ways, individual differences in facial expression should relate to the consistent expression of personality traits, stable relationship patterns, and cumulative life outcomes that collectively define the course of life.

To examine these issues, we conducted what seems on the surface to be an improbable study.<sup>80</sup> From women's college yearbook photos, we coded the intensity of the smile in 110 women using the Facial Action Coding System. Our coding of the smile was based on the action of the zygomatic major muscle and the orbicularis oculi muscle. We then related this measure of positive expression to measures of personality, relationships, and personal well-being gathered over the next 40 years.

Our predictions derived from recent theory that holds that positive emotions build personal resources by fostering creative thinking, the readiness to take advantage of opportunities, the strengthening of social bonds, and the "undoing" of negative emotions. In support of these claims, positive emotional expression in the yearbook related positively to the personality traits of affiliation and competence, which reflect good interpersonal and cognitive skills, respectively; and negatively with negative emotionality, in both young and middle adulthood (see TABLE 4). Positive emotional expression also predicted increases in competence and decreases in negative emotionality between ages 21 and 27 and again from ages 43 to 52. Over time, women who expressed more positive emotion in their yearbook pictures became more organized, mentally focused, and achievement oriented, and less susceptible to repeated and prolonged experiences of negative affect.

Turning to the quality of the spousal relationship, those women who displayed more positive emotion in their yearbook pictures were more likely to



**TABLE 4. Correlations between positive expression (positivity) and personality and life outcomes controlling for attractiveness and social desirability**

	Positivity	Positivity/ Attractive	Positivity/Social Desirability
Self-report			
Negativity (21)	-.38*	-.40*	-.32*
Negativity (27)	-.21*	-.21*	-.21**
Negativity (43)	-.23*	-.23*	-.18**
Negativity (52)	-.27*	-.29*	-.28*
Affiliation (21)	.33*	.32*	.28*
Affiliation (43)	.18**	.18**	.16
Competence (27)	.19**	.20**	.16
Competence (43)	.20**	.24*	.15
Competence (52)	.29*	.31*	.26*
Life outcomes			
Married at 27	.19*	.18**	.16
Marital satisfaction (52)	.20**	.16	.18
Well-being			
Age 21	.20*	.20*	.11
Age 27	.25*	.26*	.23*
Age 43	.18**	.19*	.12
Age 52	.27*	.28*	.24*

\* $P < 0.05$ ; \*\* $P < 0.10$ .

be married by age 27, less likely to remain single into middle adulthood, and more likely to have satisfying marriages 30 years later. These findings correspond with those of researchers who have documented how momentary displays of positive emotion help married couples deal more effectively with conflict in their relationships.<sup>81</sup> Positive emotional expression in the yearbook also predicted high scores on measures of well-being at ages 21, 27, 43, and 52. Across young and middle adulthood, women prone to expressing positive emotions experience fewer psychological and physical difficulties, have better relations with others, and generally feel more satisfied with their lives. Importantly, almost all of these findings remained significant when we controlled for the physical attractiveness of the women and their tendency to offer socially desirable responses.

Complementary evidence has been documented in studies of the lives of anger-prone individuals. Caspi, Elder, and Bem found that the tendency to express uncontrolled anger in early childhood (as assessed by parental reports of frequent, severe temper tantrums) later related to the broader trait of ill-temperedness, which showed considerable stability across the life span.<sup>82</sup> Furthermore, this childhood expressive tendency predicted negative life out-

comes, including lower educational attainment, lower-status jobs, lower military rank, erratic work patterns, and divorce. The tendency to express intense anger creates a hostile social environment that brings about the stable expression of trait hostility and a pattern of negative life outcomes in work and family.

Taken together, these findings reveal how even the briefest observations of expressive behavior—the millisecond exposure required of photography—can reveal information about the continuity of personality and important life outcomes over the course of life. These studies work, I believe, because expressive behaviors such as smiles or temper tantrums are, indeed, such powerful displays.

## CONCLUSIONS

In this essay, I hope to have argued that at their very core emotions are social, they motivate thoughts and actions that are crucial to humans' most important relationships within the context of spontaneous interactions.<sup>17,83</sup> In making this point, I hope to have challenged two notions that have implicitly guided the field of emotion.

The first is that there are a limited number of emotions, anywhere from 7 to 12. A social-functional account of emotion has opened up the field and led researchers to consider a variety of emotions, from compassion to gratitude, that are vital to the functioning of relationships.

The second has to do with the duration of emotions. Emotions have long been viewed as brief phenomena, with little to say about more enduring properties of human nature, such as long-term relationships, personality traits, or psychological disorders. Emotional expressions are, indeed, brief; but they reveal how the human mind selectively interprets and reacts to important situations, and the tone and content of the individual's enduring relationships. Although brief and fleeting, facial expressions of emotion are signs of the course of life.

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