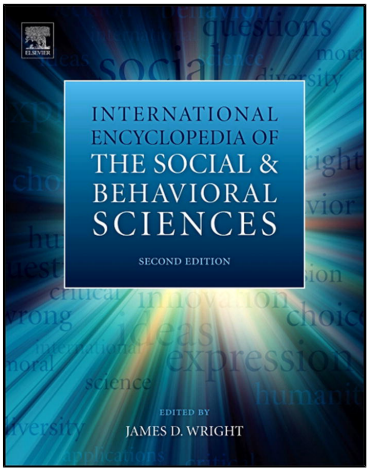

From Jang, D., Elfenbein, H.A., 2015. Emotion, Perception and Expression of. In: James D. Wright (editor-in-chief), International Encyclopedia of the Social & Behavioral Sciences, 2nd edition, Vol 7. Oxford: Elsevier. pp. 483–489.
ISBN: 9780080970868

Emotion, Perception and Expression of

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Abstract

Emotions evolved to serve our need to communicate quickly and efficiently. Expressions serve as symptoms of our internal states, a signal appealing to others for action, and a symbol to convey information about an event. Expression produces outwardly visible cues interpreted by perceivers for their valuable information. Expression and perception is largely automatic, yet also results from norms in expressing and perceiving emotions. Although expressions may have originated from reflexive actions, they have evolved into a complicated system providing information about other people's reactions, attitudes, and likely behaviors. Reading these messages confers an advantage for interpersonal interactions.

The human experience is characterized by interaction with others. Above and beyond verbal communication, communicating via emotion serves as a quick and efficient means to coordinate social action by conveying information that provides insight into others' internal states. Humans are uniquely equipped to display emotional expressions, via highly developed facial and vocal structures, body language, and artifacts such as written communication, music, and art. Likewise, humans are well equipped to perceive these emotional expressions, and those who can do so effectively have an advantage in their social lives and even work lives.

We begin by stepping back from emotional expression and perception to discuss more broadly the emotion process, which is responsible for the emotional experience that typically sets expression and perception into motion. We discuss theoretical perspectives and empirical findings regarding their functions, individual differences, and deliberate regulatory processes. We then discuss the concept of emotional contagion, whereby people 'catch' each other's emotions in a complex interplay between expression and perception, as well as discuss cultural differences.

The Emotion Process

The antecedent to expressing an emotion is a combination of emotional experience and deliberate attempts to manipulate expressions for strategic purposes. We summarize the two major theoretical perspectives on emotional experience.

Although intuition may suggest emotions arise irrationally, evidence shows that emotions arise out of an orderly and clearly sequenced process (Frijda, 1986; Smith and Lazarus, 1990). The most common scientific definition of emotion is that they are psychological and physiological reactions to the stimuli that people observe in the world around them – with stimuli including other people, events, internal thoughts, written messages, music, and works of art, to name a few (Frijda, 1988).

This means emotions are about *something* – something that catches our attention, even if we cannot immediately identify its source. Major theorists argue that we continually and automatically engage in a process called cognitive appraisal (Frijda, 1986; Smith and Lazarus, 1990). Cognitive appraisal involves asking a series of questions in an ordered checklist to evaluate any noteworthy stimulus (e.g., Frijda, 2007; Scherer, 1988; Smith and Ellsworth, 1985). Although there are slightly differing models, most include at least these five dimensions, among others: (1) *valence*, also called *pleasantness*, which is the extent to which the stimulus is positive, negative, or neutral – e.g., distinguishing happiness from sadness; (2) *novelty*, which is the extent to which the stimulus is familiar versus unfamiliar – e.g., distinguishing a positive surprise from serenity; (3) *goal obstruction*, or the extent to which the stimulus indicates that there is a concern in reaching one's goals – e.g., distinguishing challenge from enjoyment; (4) *control*, or an evaluation of whether the stimulus is controllable by the self, another person, or no one – e.g., distinguishing pride from anger from sadness; and (5) *fairness*, also called *norms*, or the extent to which the stimulus is consistent with social or personal standards – e.g., distinguishing contempt from irritation. The pattern of evaluations acts like a formula to determine what emotion we should feel (see **Table 1** for examples). For example, the dimension of control distinguishes many related emotions, particularly negative emotions – e.g., if a team project gets canceled, then a sense of personal responsibility over the cancellation is associated with guilt or shame,

Table 1 Dimensions of emotional appraisal

	Pleasantness	*Novelty*	*Goal obstruction*	*Control*	*Fairness*
Happiness	High	High	No		High
Sad	Low	Low	Yes	No one	
Angry	Low	High	Yes	Another person	Low
Fear	Low	High	Yes	Another person or no one	
Surprise		High			
Serenity	High	Low			
Disgust	Low				
Guilt	Low		Yes	Oneself	Low
Pride	High		No	Oneself	High
Relief	High		No		

Sources: Ellsworth, P.C., Scherer, K.R., 2003. Appraisal processes in emotion. In: Davidson, R.J., Scherer, K.R., Goldsmith , H.H. (Eds.), Handbook of Affective Sciences. Oxford University Press, New York, pp. 572–595. Scherer, K.R., Schorr, A., Johnstone, T. (Eds.), 2001. Appraisal Processes in Emotion: Theory, Methods, Research. Oxford University Press, New York.

International Encyclopedia of the Social & Behavioral Sciences, Second Edition, 2015, 483–489

others' influence over the cancellation is associated with anger, and no one being responsible is associated with sadness or fear.

In describing this cognitive appraisal process, we emphasize that the tight mapping between appraisal dimensions and emotional experience creates opportunities for communication – through emotional expression and perception. In a process called *backtracking* (Elfenbein, 2007; Frijda, 2007), witnessing emotional displays gives us information because it allows us to step back and infer how other people appraise their situations. Even when emotional displays are strategically manipulated, backtracking provides useful information because it allows us to infer what expresser would like us to believe.

For balance, we note that there has been controversy between the *basic emotions* approach that is described here versus the *circumplex model* of emotion (Barrett and Russell, 1999). According to the circumplex model, our internal experience consists only of the pleasantness dimension of appraisal plus a sense of intensity level – and that the remainder of the appraisal process described above is a social construction. Because these two competing perspectives concern internal processes, our discussion of outward expressions can be consistent with either of these models.

This description of the appraisal process is intended to set the stage as context for discussing the expression and recognition of emotional displays. One does not only experience emotions based on these appraisals, but conveys these appraisals as information to others.

Expression of Emotion

Functions of Emotional Expression

Emotional experience creates urges that need to be released or contained. The first type of urge is to physical action; the root of the word emotion comes from the Latin word for motion. Each distinct emotion is related to specific *action tendencies* (Frijda, 1986), which are psychological and physiological responses that ready the individual to respond adaptively to the most pressing issues in their environments (Cosmides and Tooby, 2000; Frijda, 1986; Scherer et al., 2013). For example, happiness promotes social bonding, anger leads us to address problems in a relationship, and contempt leads us to reinforce a social hierarchy. The *social functional* perspective on emotion argues that these action tendencies serve functions in promoting group living (Morris and Keltner, 2000). Even if an emotion does not appear functional at every instance, it remains available in the repertoire because in some cases it helps social groups, like family units, to thrive or even simply remain intact. The second type of urge created by emotional experience is emotionally expressive behavior.

Why do we express our emotions? The Organon model (Bühler, 1934), summarized in **Table 2**, articulates three distinct functions: (1) *symptoms* convey the authentic internal experience of a speaker, which provides information to others about their states, intentions, attitudes, and likely future behaviors; (2) *signals* convey requests for actions from other people; and (3) *symbols* convey information about an event or object, in the way that spoken language represents our thoughts and environment. Although there is debate about the extent to which affective display is involuntary (i.e., symptoms, called *push factors*) or deliberate communication (i.e., signals and symbols, also called *pull factors*) (Ekman, 1971; Fridlund, 1994; Parkinson, 2005; Russell, 1994), these three functions are not meant to compete with each other. All three are valid reasons for emotional expression, and each of the three can be used singly or in combination – e.g., a wince can result from pain, can elicit helpful responses from those nearby, and can warn others to stay away from a dangerous situation (Singer et al., 2004). Separate psychological processes appear to distinguish push versus pull processes, which use separate neuroanatomical pathways guided by different tracts of facial nerves (Rinn, 1984).

Research and theorizing about emotional expression has been most common for the function of symptom; indeed, Ekman's (1971) influential *neurocultural theory* argues that our facial expressions are authentic readouts of emotional experience unless we are paying conscious attention to managing our faces. Even taking a less extreme perspective, it is clear that emotion displays are generated quickly and often without our awareness, which makes them an efficient form of communicating (e.g., Shariff and Tracy, 2011).

The signal function of emotion has also been an active focus of academic work, in terms of the social functions of emotion that lead emotional displays to induce reactions from others (Fridlund, 1994; Keltner and Haidt, 1999). By eliciting actions from others, emotions help to enhance the coordination of social groups. Positive expressions encourage others to

Table 2 The Organon model of interpersonal communication

Function	*Definition*	*Examples through emotional expression*
Symptom	Conveying the internal state of the expresser. Conveys emotions, intentions, and attitudes.	Sincere and automatic displays include an embarrassed blush when slipping on a banana peel, a surprised gasp when witnessing a car accident, and a joyful shriek when hearing good news.
Signal	Conveying an appeal to the observer that requests an action from them.	Deliberate appeals include a look of fear that begs for help, a look of anger that commands to stop, and a display of shame that tells others a punishment is no longer needed.
Symbol	Representing an object or event.	Deliberate communication of cognitive appraisal includes a scowl to show displeasure, a look of pride to convey who won the contest, or a smile to assure that a large animal is actually friendly.

Sources: Bühler, 1934/1990. Theory of Language: The Representational Function of Language (D.F. Goodwin, Trans.). Foundations of Semiotics; J. Benjamins Pub. Co., Amsterdam; Philadelphia; Scherer, K.R., 1988. Criteria for emotion-antecedent appraisal: a review. In: Hamilton, V., Bower, G.H., Frijda, N.H. (Eds.), NATO Advanced Study Institutes Series. Series D, Behavioural and Social Sciences. Kluwer, New York, pp. 89–126.

continue their actions, whereas negative expressions serve as deterrence (Blair, 2003).

Relatively little work has been done on the symbolic function of emotional expressions. Laukka and Elfenbein (2012) found that appraisal dimensions can be inferred from listening to the acoustical cues posed by professional actors through their voice. As such, we can backtrack from emotional expressions and thereby reveal information about how the expresser evaluated their situation.

Modes of Emotional Expression

Humans are uniquely equipped to express a variety of emotions, having the specialized neural circuitry and muscular structures that allow for a range of expressions that stand unrivaled compared to other species (Burrows, 2008; LeDoux, 2012). Initially, emotional expressions may have been adaptive in readying the physiological systems to react to stimuli that have survival implications such as a fear response that facilitates heightened sensitivity of the sensory organs (Susskind and Anderson, 2008). These simple reflexes produced reliable signals that conveyed valuable information to others, and over time, began to be used deliberately (Russell et al., 2003) and evolved to communicate social and abstract concepts (Blair, 2003; Shariff and Tracy, 2011).

Emotional expression takes on many forms. First, push factors create outwardly observable cues. Long-standing theories point out that emotions are composed of both subjective feeling states and physiological responses (Darwin, 1872; James, 1884). Physiological markers of emotion experience include facial expressions, nonverbal components of vocal expressions, galvanic skin response, respiration, heart rates, bodily posture, and muscular movement (Banse and Scherer, 1996; Barrett et al., 2011; DePaulo and Friedman, 1998; Ekman and Rosenberg, 2005). Any of these changes can provide visible cues to others, even if they were not necessarily meant for an audience. Second, we evolved pull factors via the ability to manipulate the most outwardly visible of nonverbal cues, namely facial expressions, vocal tone, and body posture. Facial expressions are the most salient mode of expressions for humans, especially because humans are uniquely equipped with the complex facial muscular structure that can produce many differentiated emotional expressions. Perhaps for this reason, the bulk of research on emotional expression has focused on the face (Russell et al., 2003). However, humans also have expressive control via vocal chords and bodily poses, which makes emotion expressions multimodal in nature (Rosenthal et al., 1979).

In examining channels of communicating emotion, Ekman and Friesen (1969) proposed a controllability-leakage hierarchy of channels of communication. They suggested that the more controllable channels, such as the face, are subject to high accountability on the part of the expresser, elicit external feedback from others, and provide the expresser with internal feedback. This is in contrast to the less controllable 'leaky' channels such as the body and the voice. As such, facial expressions generally express the information that we choose to volunteer (DePaulo, 1992). By contrast, information expressed through less controllable channels such as body movements and the voice may provide a truer window into a person's feelings. This information can still be controlled, but it is more difficult and requires more conscious, deliberate effort (Rosenthal and DePaulo, 1979). In a dramatic illustration of leaky communication, expressions of contempt have been found years later to predict the deterioration of marriages (Gottman, 1998).

In examining how we communicate emotion, there is an often-cited statistic that in communicating one's feelings and attitudes, 93% of the information conveyed is through nonverbal channels versus our words (Mehrabian and Ferris, 1967). However, this is based on a laboratory study that does not account for the wide range of methods available to express ourselves. This is especially true in cases where expressers and perceivers are removed in time and space – such as when one writes a letter to a distant friend – where the verbal channel is the only medium of communication.

Individual Differences in Emotion Expression

In examining individual differences in emotional expression, there have been two distinct operational definitions.

The first approach has been to examine individual differences in expressivity, or how much people tend to 'wear their hearts on their sleeves.' Some individuals have more intense levels of emotional experience and/or more intense urges to express their emotions regardless of their underlying experience (Gross and John, 1998). Expressivity has been conceptualized as a personality trait (Gross and John, 1998; Halberstadt, 1986) because it refers to individual differences in one's way of being rather than producing correct versus incorrect expressions.

The second approach has been to examine individual differences in the ability to express one's emotions clearly so that they can be understood accurately by others. This treats expressivity as an ability – testing if the emotions intended were communicated to others. Emotional expression accuracy – as well as emotion perception accuracy, which is discussed below – is typically considered central to models of *emotional intelligence* (Mayer et al., 2008), as well as the related constructs of *affective social competence* (Halberstadt et al., 2001) and *social skill* (Riggio, 1986). We have an intuitive understanding that controlling emotional displays can be beneficial, e.g., terms like *poker face* exist to explain the benefits of hiding one's evaluation of a situation. Indeed, expressive accuracy appears to be an asset, with greater expression ability associated with positive life outcomes such as workplace performance (DiMatteo et al., 1986).

It is noteworthy that these two distinct ways to conceptualize individual differences in emotion expression – that is, expressiveness versus expression accuracy – tend to be positively correlated, albeit with mixed findings (Halberstadt, 1986; Tucker and Riggio, 1988). An interpretation could be that we become clearer in conveying emotions that we tend to convey intensely – in other words, perhaps practice makes perfect.

Regulation of Emotional Expression

From a young age, we regulate our emotional expressions to be appropriate for the social environment (for a detailed review, see Gross, 2007). However, this regulation comes at a cost – namely, the frustration of holding in the action tendencies and expressive energy that evolved for each emotion (Gross and Levenson, 1993). Notably, e-mail existed relatively briefly before the expressive channel of *emoticons* was invented

(Associated Press, 2007), presumably to reduce the frustration involved with expressing oneself in a text-only medium.

Humans are potentially unique from other species for following norms about displaying affect that match expectations about emotional experience in social contexts (Gallois, 1994; Hochschild, 1983), with display rules to deintensify, intensify, neutralize, and mask displays with qualitatively different displays (Ekman, 1972). This makes the display of emotions an interactive process between the physiological responses and the cultural, social, and interpersonal expectations that shape emotional expression (Scherer et al., 2013). The discussion above of the Organon model emphasizes that pull factors are a matter of deliberate communication – and, as with verbal communication, the messages we choose are shaped by social norms. Returning to appraisal theory provides a theoretical framework to guide what emotions tend to be appropriate in given situations. For example, people expect positive displays when an event is supposed to stay positive, such as when losing, beauty contestants must smile for the winner.

As mentioned above, regulation can come at a cost, if it is accompanied by feelings of inauthenticity or expressive urges being thwarted. In the working world, the concept of emotional labor (Hochschild, 1983) refers to the requirement to express specific emotions on the job, whether or not they are felt, and particularly toward clients, e.g., flight attendants displaying happiness or judges displaying neutrality (Rafaeli and Sutton, 1989). In regulating one's expressions, two major strategies have been identified: surface level, which involves simply changing the appearance of displays, versus deep level, which involves *reappraising* by returning to the appraisal model and reconsidering one's original answers (Grandey, 2003). For example, one can 'look on the bright side' to reappraise valence or find a way to change one's circumstances to reappraise control.

Perception of Emotion

Functions of Emotion Perception

Although the push factors described above emphasize that emotional expression can occur for its own sake, ultimately expressions serve as communication. Each of the modalities for expression described above produces cues that are visible to the social environment, and visible cues can be perceived by others. Brunswik's (1955) general model of perception has been central to research on emotional perception by emphasizing that a psychological state produces cues and cues are recognized, but there is room for error at each of these stages. Looking at the nature of the errors, perception is imperfect not only because we make mistakes but also by design; there may be a kind of 'arms race' between expressers who may wish to shield their emotional state and those who wish to uncover it (Schmidt and Cohn, 2001).

We appear to be hardwired to perceive others' emotions. Encounter with emotional stimuli triggers a rapid neural response that attempts to identify the emotion being perceived. Neural activity identifiable as emotion perception occurs around 100 ms after initial perception of the stimulus, with about 300 ms required before conceptual knowledge of the specific emotion being perceived is activated (Adolphs, 2002). Accumulated evidence suggests neural processes related to emotion are not confined to particular brain regions but involve interaction from various structures in the brain (Lindquist et al., 2012). Although detailed discussion is beyond the scope of the article, perceiving emotional stimuli involves sensory pathways to detect the stimulus, regions of the brain associated with retrieval of memories and conceptual information, and activation of neural systems that facilitate simulation of emotion (Adolphs, 2002; LeDoux, 2012).

Revisiting the Organon model, perception of emotion in others is valuable because expressions of emotions are not only clues about others' internal experience of emotions, but serve as a social signal that offers clues about another person's appraisal of their situation and their likely actions (Campos et al., 1994). Achieving insight into the emotional states of others furnishes one with a survival advantage because a functioning society requires coordination among individuals (Burrows, 2008). Decoding the emotions of others facilitates achievement of shared goals, notably in distinguishing the critical decision to approach versus avoid objects, and the establishment and maintenance of social hierarchies (Keltner and Haidt, 1999; Rosenthal et al., 1979; Schmidt and Cohn, 2001).

Individual Differences in Emotion Perception

A long-standing research program examines individual differences in emotion recognition accuracy and its correlates (Hall et al., 2009; Nowicki and Duke, 1994; Rosenthal et al., 1979). For example, women are better at emotion recognition, as are people of higher education levels and socioeconomic status (Hall et al., 2009; Izard, 1971). As mentioned above, accuracy with emotional expression and perception fall within the larger umbrella of emotional intelligence (Mayer et al., 2008), which has expanded interest in the topic.

There is an advantage to people who can recognize emotions well – better social adjustment, better school performance, and even better workplace success across a wide range of industries and job types (for reviews, see Elfenbein et al., 2007; Hall et al., 2009). That said, being exceptionally good at recognizing emotions can also make people uncomfortable if they feel others are *eavesdropping* on their private feelings (Blanck et al., 1981; Elfenbein and Ambady, 2002).

Given their importance in emotional functioning, are people good at expressing emotions generally good at recognizing emotions? The answer appears to be yes. Accumulated evidence suggests a positive association between expression and perception when expression is measured in terms of an ability (Elfenbein and Eisenkraft, 2010).

Regulation of Emotion Perception

Just as expressers can regulate their displays, perceivers can regulate their interpretations. Decoding rules (Matsumoto, 1989) refer to norms about the appropriate recognition of others' emotions. Perceivers can choose to decode a message inaccurately, or they can decode a message accurately but not allow themselves to respond. Decoding rules can protect perceivers' interests when sensitivity to others' cues may be detrimental. For example, a parent might pretend they did not

witness a display of contempt between two siblings, or tears after their child loses a chess tournament.

Emotional Contagion

Although we have discussed emotion expression and perception as related but separate constructs, and largely as dyadic phenomena, they act together in concert and across multiple individuals. That is, emotions are contagious (Barsade, 2002; Hatfield et al., 1994). Relatively little is known about the mechanisms for *emotional contagion*. The most influential account is *primitive efference* (Zajonc, 1998) – notably that we mimic others' emotional expressions and, through facial feedback, come to experience the same emotions ourselves (Hatfield et al., 1994). However, this mechanism and its magnitude when tested cannot satisfactorily explain empirical findings (Parkinson, 2011). Numerous other mechanisms for the social sharing of emotion have been proposed (Elfenbein, 2014). These include (1) *social comparison*, also called *social appraisal*, in which people compare their feelings with compatriots in order to learn how they are supposed to feel (Barsade, 2002; Parkinson, 2011); (2) *emotional interpretation*, where others' expressive displays serve as information that feeds into the emotional appraisal process and thereby induces emotions (Hareli and Rafaeli, 2008); and (3) *empathy*, or imagining another person's feelings, which is itself emotionally evocative (Davis, 1983; Hatfield et al., 1994). Although most work on contagion focuses on sharing a convergent state, perceivers can also take on a complimentary state (Hess and Fischer, 2013) – e.g., joy in the face of opposing sports fans' disappointment, fear in the face of rage, or contempt in the face of someone's shame.

Just as we may need some minimal perception of other's emotions to converge with them, the reverse can be true in that sharing others' emotions aids the emotion recognition process. The perceiver's own facial expression or activation of facial muscles associated with emotional expression can facilitate or inhibit perception of congruent affective stimuli and also influence the accuracy of emotion perception (Havas et al., 2010; Strack et al., 1988). Along these lines, we may be able to feel our way into perceiving others' expressions.

Cultural Differences in the Expression and Perception of Emotion

Two major mechanisms underlie the cultural differences in emotion that have long been observed, namely norms and styles. Norms govern our display rules and decoding rules, and both of these vary substantially across cultures. Notably, cultures that value greater social harmony tend to inhibit the expression of negative emotion (Mesquita and Frijda, 1992). Styles of emotional expression also vary. According to dialect theory, the specific cues we use to express our emotions – e.g., the configuration of facial muscles, acoustical properties of the voice – differ subtly across cultures (Elfenbein, 2013). Dialect theory was developed to explain the finding of *in-group advantage*, namely that accuracy tends to be higher when perceiving emotions expressed by members of the same versus different cultural group due to greater familiarity.

See also: Disgust, Psychology of; Emotion and Expression; Emotion in Cognition; Emotion, Neural Basis of; Emotional Intelligence and Competencies; Emotional Regulation; Emotions and Aging; Emotions and Health; Emotions and Intergroup Relations; Emotions and Work; Emotions, Psychological Structure of; Emotions: Methods of Assessment; Facial Emotion Expression, Individual Differences in; Facial Perception; Self and Emotional Development in Adulthood and Later Life.

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