Fundamentals of nonverbal behavior

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5. Facial expression: Methods, means, and mowes

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... so your face bids me, though you say nothing.
- Fool to King Lear

Introduction

Poets and philosophers often focus on the face as central to human communication, but the interest of psychologists in facial expression has been more episodic. At first, many well-known researchers such as Allport (1924), Landis (1924), Goodenough (1932), Guilford (1929), and Klineberg (1938) studied facial expressions of emotion. Several influential reviewers (Bruner & Tagiuri, 1954; Hunt, 1941; Tagiuri, 1968), however, argued that there were no consistent answers to fundamental questions such as whether information provided by facial expressions was accurate or whether facial expressions of emotion were universal. During the next 20 years there were comparatively few studies of facial expression, with the exception of Schlosberg’s reports (1941, 1952, 1954) that categorical judgments of emotion could be ordered in terms of underlying dimensions.

A number of more recent developments have contributed to the resurgence of interest in facial expression, including methodological, theoretical, and technological advancements. Indeed, part of the difficulty in obtaining consistent results in the early facial expression studies was the lack of well-defined, objective methods for describing facial behavior. Since 1970, several reliable facial measurement techniques have been developed, which have allowed greater precision within studies and greater comparability across studies than was possible earlier. This

This chapter incorporates some material from Ekman (1989) and Fridlund, Ekman and Oster (1987). Paul Ekman’s work is supported by a Research Scientist Award from the National Institute of Mental Health (MH 0692).
Facial muscle use (e.g., eye-closure, eyebrow raising) systems and the measurement of emotional discharges from facial coding.

The measurement of visible facial action units (FAUs) that code expressive and emotional states has been used in psychology for over 150 years. The Facial Action Coding System (FACS), developed by Ekman and Friesen (1978), is a standardized method for coding facial expressions. The FACS includes 44 distinct action units that are categorized into seven categories: brow, eye, zygomatic, mouth, chin, lip, and other (e.g., eyelid, nostril) muscles. Each action unit is scored on a scale from 0 to 5, indicating the degree of muscle activity. The FACS has been used in numerous studies to explore the relationship between facial expressions and emotional states.

In summary, the FACS is a reliable and valid method for coding facial expressions, and it has been used extensively in research on emotion recognition and expression. However, it is important to note that the FACS is not the only method available, and other methods, such as electromyography (EMG) and functional magnetic resonance imaging (fMRI), may provide additional information about the neural correlates of facial expressions.
Measurement of visible facial action

Since Landis's report in 1924, many systems have been devised to structure and analyze the observation of facial action. Such measurement systems share the following features: (1) They are noninvasive; (2) they offer a permanent visual record (videotape or cinema) that allows slowed playback and/or multiple viewings rather than real-time observation; and (3) they rely on an observer who scores or codes behavior according to a set of predetermined categories or items. Many of these systems were not constructed as independent contributions but, rather, in the course of studying other substantive questions. Typically, the rationale for developing these systems was based on neither sound theoretical argument nor empirical data (see Ekman, 1982, for a detailed comparison of 14 major facial coding systems).

A problem encountered by all researchers trying to understand facial behavior is selecting appropriate behavioral units for dividing the ongoing, complex, and dynamic stream of facial activity. Though this issue is of prime importance, many coding systems have not considered it. As Altmann commented, "What stage in our research could be more crucial than this initial choosing of behavioral units. Upon it rests all of our subsequent records of communication interactions and any conclusions we may draw from them" (Altmann, 1968, p. 501; also see discussions by Buck, Baron, & Barrette, 1982; and Condon & Ogston, 1967a,b).

Two major approaches have been used in constructing facial coding systems: the message judgment approach and the measurement of sign vehicle approach. In the message judgment approach, facial expressions are presented in their entirety, and judgments are solicited from observers. For example, slides of psychiatric patients are shown to judges who must then classify each one as depressed, normal, or schizophrenic. Message judgment approaches either place expressions along emotion scales (e.g., Schlosberg, 1941, 1952, 1954) or in discrete emotion categories (e.g., Izard, 1971, 1972; also see the review of both scaling and categorical approaches by Ekman, Friesen & Ellsworth, 1982b).

In the measurement of sign vehicle approach, slides are examined for particular differences that might differentiate diagnostic categories. For example, depressives might raise their inner eyebrows more than schizophrenics or normals do, and the schizophrenics might show more perioral facial actions.

Both approaches to facial coding have value in certain applications, although the message judgment approach is singularly handicapped: It is impossible in such a system to determine exactly which facial signs result in judgment differences. This liability is particularly pronounced when studying emotional behavior. But an analytic approach that specifies discrete facial actions avoids sloppy inferences regarding critical facial signs of emotion.

Facial unit selection. The choice of behavioral units in facial coding systems has been based on theory (largely ethological formulations), inductive observation, or facial anatomy.

Theory-based selection. Ekman, Friesen, and Tomkins's (1971) Facial Affect Scoring Technique (FAST) specified what they considered, on the basis of their previous research, to be the distinctive components of six universal affect expressions (77 descriptors of the hypothesized facial appearance for happiness, sadness, anger, fear, surprise, and disgust). FAST proved to be useful in studies relating subjects' facial expressions to autonomic responses, experimental conditions, and observers' judgments. But it could not be used to determine whether actions other than those specified were relevant to emotion or to study developmental changes or individual differences in the expression of emotion. No provision was made to code the intensity of the facial behaviors, and facial descriptors were specified as happening in two states, either "on" or "off."

Izard continued working with theoretically based coding systems and produced the Maximally Descriptive Facial Movement Coding System (MAX; Izard, 1979) and the System for Identifying Affect Expression by Holistic Judgment (AFFEX; Izard & Dougherty, 1980). Like FAST, MAX and AFFEX are based on early facial expression recognition studies that established that certain configurations of facial muscle groups are universally judged to be associated with particular emotions. Neither MAX nor AFFEX offers an exhaustive listing of possible facial behaviors; MAX, for example, provides only those 27 descriptors that Izard hypothesized were necessary to form judgments about seven "primary" emotions. No data are provided to show that the facial actions excluded are not part of emotional expression, and thus the "exhaustiveness" of the systems cannot be confirmed or disconfirmed using these systems. No provision is made for encoding response intensity, and like FAST, facial action is seen as either "on" or "off."

MAX and AFFEX were designed primarily for coding emotional expressions in infants. Oster and Rosenstein (1983) pointed out three diffi-
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Gregorian also distinguished the actions of some muscles without data supporting that they operated independently in visible behavior.

Facial Action Coding System: FACS

The Facial Action Coding System (FACS) (Ekman & Friesen, 1976, 1978) was developed to fill the need for a comprehensive, general-purpose system applicable in any context, not just in emotion-related situations. As a prerequisite, Ekman and Friesen sought to discover the precise role of each facial muscle on visible facial expression. In order to do so, they resurrected Duchenne’s (1862) method of inserting needle electrodes in individual facial muscles. The muscle activity elicited by electrical stimulation at the electrode tip indicated the effect of each muscle on facial appearance. The facial actions that Ekman and Friesen discerned were found to be in accord with Hjorstjö’s (1970) independent anatomical studies of the appearance of single facial muscle actions.

The descriptions of facial actions comprising FACS were based not only on the resulting stimulation data but also on the determination of whether particular muscle combinations produced visibly distinguishable facial actions. Distinct muscles that produced morphologically identical facial actions were combined. But if a single muscle were found to produce two or more visibly distinct actions, two or more facial action units were designated. Ekman and Friesen derived 44 action units (AUs) that can, singly or in combination, account for all visible facial movements. All AUs can be scored according to five-point intensity ratings, and the time of the onset, apex, and offset for each AU can be coded. FACS also offers high interrater reliabilities.

FACS takes considerable time to learn and use, requiring repeated, slow-motion viewing of facial actions. Because slow-motion replay is required, FACS is not suitable for real-time coding. By its nature, FACS includes more distinctions than may be needed for any particular study, which increases the expense and tedium of measurement. However, once meaningful behavioral units are derived empirically (i.e., not from theoretical or inductive assertions), it is possible in a given study to collapse some of the elementary measurement units or to disregard subtle distinctions. This point applies especially to studies of emotion – FACS contains hypotheses about which AUs may, in fact, correlate with specific emotional states.

Although not all of the FACS emotion hypotheses have been tested, there is evidence (reviewed by Ekman, 1982) to support a number of the predictions. Studies of spontaneous emotional expression in which a subjective report was used as a validity criterion have supported predictions of the actions that signal happiness, fear, distress, and disgust. And studies using observers’ attributions of emotion as a validity criterion have supported FACS predictions for these emotions as well as for surprise and anger.

EMFACS

Ekman and Friesen wanted to supplement the comprehensive FACS with a standardized alternative that measures broader, emotion-related facial actions. The result, EMFACS, considers only emotional expressions and, among those, only the AUs and AU combinations that are best supported by empirical findings or theory as emotion signals. As such, EMFACS is really a theory-based coding system, but with an important difference. Its systematic derivation from FACS permits confident statements about what was omitted. The solidity of EMFACS as a system with empirical grounding is suggested by several concurrent validation studies with FACS, which resulted in high correlations (in the + .80 range) with emotion ratings obtained with FACS and EMFACS.

Coding time with EMFACS is reduced, albeit at the expense of distinguishing subtler AUs and AU combinations, including those indicative of conversational signals. The precise temporal dynamics of the facial actions are ignored in favor of unitary demarcations of peak actions. To maintain an empirical approach to the measurement procedure, the facial actions are, like FACS, described in terms of numerical codes. The coder is also requested not to interpret the actions as emotion signals until they are later tabulated and classified according to EMFACS criteria.

Other measures of visible facial action. Perhaps the most popular measure of facial activity has been the direction of gaze; yet surprisingly this rarely has been studied in relation to emotion or facial expressions. (Exceptions were provided in research by Graham & Argyle, 1975; Lalljee, 1978; Waters, Matas, & Sroufe, 1975.) Although pupil dilation has been studied in relation to emotion, we know of no study of associated changes in facial expression. Blood flow, skin temperature, electrodermal responding, and coloration changes in the face are other measures that so far remain unexplored.
Facial expression, emotion, and aesthetic experience.

Facial expression refers to the visual display of emotions on the face. However, facial expressions are not always reliable indicators of emotional state. For example, people can fake or disguise their emotional responses in order to convey a desired impression. Additionally, cultural and individual differences can influence how facial expressions are interpreted.

Facial electromyography (EMG) technology allows researchers to measure the activity of specific muscles associated with facial expressions. EMG can help identify the underlying physiological mechanisms behind emotional expressions, providing valuable insights into the emotional states of individuals.

This technology has been used in various research areas, including psychology, medicine, and communication. By analyzing EMG signals, researchers can gain a deeper understanding of the intricate relationship between facial expressions and emotional experiences. This knowledge can aid in developing more effective communication strategies, improving emotional well-being, and enhancing our overall understanding of human behavior.

Facial electromyography is a powerful tool that enables scientists to explore the complex interplay between facial expressions and emotions. Its application in diverse fields highlights the interdisciplinary nature of this research area and underscores the importance of integrating physiological data into our understanding of emotional experiences.
that depressed patients showed more Duchenne smiles in a discharge interview, as compared with an admission interview, but that there was no difference in the rate of other kinds of smiling.

Steiner (1986) discovers that Duchenne smiles, but not other types of smiles, increased over the course of psychotherapy in European patients who were judged to have improved. Ruch (1987) found that Duchenne smiles were sensitive to the amount of humor felt by German adults when responding to jokes or cartoons. And Schneider (1987) pointed out that in young German children Duchenne smiles revealed whether they had succeeded or failed in a game.

Ekman and Friesen (1982) also proposed that involuntary enjoyment smiles would differ from other smiles in the amount of time it takes for the smile to appear, how long it remains on the face before fading, and in the time required for the smile to disappear. Two studies have shown the utility of these measures of timing, which are, however, much more costly to obtain than is the measurement of which muscles are recruited. Bugental (1986) found that women showed more enjoyment smiles with responsive than with unresponsive children. Weiss, Blum, and Gleberman (1987) discovered that involuntary enjoyment smiles occurred more often during posthypnotically induced positive affect than in deliberately posed positive affect.

Collectively, these studies suggest that smiles should no longer be considered a single category of behavior but can be usefully distinguished by measuring their different facets. Such measurements can be made only with comprehensive coding systems such as those described.

The universality of facial expressions of emotion

Although methodological improvements provide the substrate that supports empirical knowledge, the knowledge itself is the goal. In the area of facial expressions of emotion, no issue is more important than the question of whether facial expressions of emotion are universal across all cultures or are specific to each. This question is significant because it addresses several issues: the basic similarity of human emotional experience, the biological basis for emotion, and the relationship between facial expression and emotion. The history of research on the universality of facial expressions began with social scientists who believed that such expressions were culturally determined. At least five early studies (Dickey & Knower, 1941; Triandis & Lambert, 1958; Vinacke, 1949; Vinacke & Fong, 1955; Winkelmayr, Exline, Gottheil, & Paredes, 1971) attempted to show differences across cultures in the way that observers judge facial expressions. In fact, their findings were either ambiguous or showed similarity across literate cultures.

All five of these studies were undertaken to demonstrate that facial expressions are culturally specific, and yet they found evidence of universality. But each study had major design flaws. Most gave little thought to the necessity of sampling systematically the facial expressions studied. Rather than selecting expressions according to either theory or a representative data base, the stimuli were selected for convenience.

Researchers who have attempted to demonstrate universality have used three different research methods: (1) poses of emotion elicited from members of different cultures, (2) spontaneous expressions compared in two or more cultures, and (3) comparison of judgments of emotions made by observers in different cultures who viewed the same set of facial expressions.

Eliciting poses

Ekman and Friesen (1971) asked members of one culture to show how their face would look if they were the person in each of a number of different emotional contexts (e.g., "you feel sad because your child died," "you are angry and about to fight"). They interpreted their findings as strongly supporting the possibility of universality, as observers in another culture did far better than chance in identifying which emotional contexts the posed expressions were intended to portray. This finding had unusual relevance because the persons displaying the expressions were members of a visually isolated New Guinea culture (the South Fore). The ability of Americans to understand these New Guinean expressions could not be attributed to earlier contact between these groups or to both having learned their expressions from mass media models.

Three problems limit these findings, however. First, there has been only one such study, and it has not been repeated in another preliterate, visually isolated culture, or for that matter in a literate, non-Western, or Western culture. Second, not all six of the emotions portrayed were accurately recognized. Although anger, disgust, happiness, and sadness were distinguished from one another and from fear and surprise, the American observers could not distinguish the New Guineans' portrayals of fear and surprise. Third, the facial expressions were posed,
comparing expression intensities

Emotions like Anger and fear are universal, the next step is to determine whether the facial expressions of different cultures can be used to indicate these emotions. The facial expression method was used to determine if the facial expression method could be used to indicate these emotions. The next step is to determine whether the facial expression method can be used to determine the intensity of these emotions.
mally but presumably is learned by observing the expressions that actually do occur. (Some have suggested that the recognition of emotion is innate, but whether it is innate or learned is not relevant to this particular point.) If the expression of anger involved a slack jaw and raised brows in culture A and lowered brows and pressed lips in culture B, then the people from those cultures should disagree in their judgments of emotion when viewing photographs of these two different expressions. But this did not happen. People from different cultures agree in attributing anger to photographs showing lowered brows and pressed lips and agree in attributing surprise when the jaw is slackened and the brows are raised (Figure 5.1).

A second objection is that the observers in all these studies were responding to posed, not spontaneous, expressions. It seems far-fetched to propose that these are two unrelated sets of facial expressions, a posed set that for some reason is recognized across cultures and a spontaneous set that is culture specific. Furthermore, the posed expressions are similar in form to the expressions found in the cross-cultural studies of spontaneous expressions. Although such comparisons between spontaneous and posed behavior can be made only for disgust, fear, and happiness (because other emotions have not been elicited in cross-cultural studies of spontaneous expression), there is no reason to expect that such similarity would not be found for other emotions. In Western cultures, such similarities between posed and spontaneous expressions have also been established for anger, surprise, and sadness.

Another answer to this question about whether universality is established if the judged expressions are posed comes from the study of the spontaneous facial behavior of Japanese and American college students described earlier (Ekman, 1973; Friesen, 1972). Japanese and American observers judged whether the facial expressions of Japanese and American students were elicited by watching a stressful or a neutral film. Observers of both cultures were equally accurate whether they judged members of their own or the other culture. Moreover, persons of either culture who were judged correctly by Americans were also judged correctly by Japanese ($r > +.75$).

A third objection is that all the people who were studied shared the same visual or media culture. Perhaps they all learned to recognize emotional expressions, or even to make those expressions, by observing the same models in films, television, and photographs. This criticism is met by a judgment study in a visually isolated, preliterate New Guinea culture, the South Fore (Ekman & Friesen, 1971). (These were the same

Figure 5.1. Seven basic emotions: (a) happiness, (b) sadness, (c) fear, (d) anger, (e) surprise, (f) disgust, and (g) contempt. (Matsumoto & Ekman, 1989.)
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phenomenological, qualitative, or quantitative, and in its relationship to other aspects of the expression. The present study is unique because it examines the relationship between facial expressions and cultural context. The results indicate that cultural factors play a significant role in the interpretation and expression of emotions. The findings suggest that cultural differences in facial expressions may impact the way emotions are communicated and perceived. Further research is needed to explore the extent to which facial expressions are influenced by cultural factors.
mass media: the South Fore in Papua New Guinea (Ekman & Friesen, 1971), and the Dani in West Iran (Heider & Rosch, reported by Ekman, 1973). Members of these cultures chose the same facial expressions for particular emotions as did members of literate cultures.

A limitation of these cross-cultural experiments is that the facial expressions presented were not genuine but were posed by subjects instructed to show a particular emotion or to move particular facial muscles. One interpreter of this literature (Mead, 1975) suggested that universality in judgments of facial expression might be limited to just such stereotyped, posed expressions. Two experiments, however, argue against this interpretation. Winkelmayer, Edline, Gottheil, and Parades (1978) chose motion picture samples from interviews with normal and schizophrenic individuals to see whether emotion judgments by members of different cultures would differ when spontaneous rather than posed expressions were shown. There was no overall difference among American, British, and Mexican observers. However, the Mexican observers were less accurate than the others were in judging the facial expressions of normal, but not schizophrenic, subjects. This difference had not been predicted, may have been due to language and/or culture, and has not been replicated.

The evidence strongly supports universality for six or more emotions, which represents only a small percentage of facial behavior. How accurate are people in using facial behavior to infer emotional state in an ongoing social interaction? Is the face used as a source of information in ordinary human relationships?

Accuracy in judging facial expressions of emotion

In determining the accuracy of judgments based on facial expression, a continuing problem has been deciding on a criterion, independent of the face, for establishing which emotion, if any, was experienced at the moment of facial expression. This is particularly problematic considering that most facial behavior is probably not related to emotional display; rather, it appears to be punctuative, gestural, self-communicative, or paraparactic (Ekman, 1977, 1979).

The problem of an independent criterion, and thus the possibility of validation, has been the greatest obstacle to research on accuracy in judging facial expressions of emotion. A common approach has been to ask subjects to describe their feelings (usually retrospectively) and to see whether their facial expressions differ when reporting emotion A compared with emotion B. Such self-reports are error prone, however, as subjects may fail to remember, or to distinguish among, the emotions experienced, particularly if several minutes elapse before they make the report. For example, a subject who successively felt anger, disgust, and contempt while watching a film might not recall all of these reactions, their exact sequence, or their time of occurrence. This problem can be reduced by limiting self-reports to grosser distinctions (i.e., between pleasant and unpleasant feelings); however, one then cannot determine specifically the relationships between more complex facial behaviors and more differentiated affective states.

A second approach has used elicitors to arouse specific emotions, for example, affectively positive versus negative films or slides; anticipation of an electric shock versus a no-shock trial; or hostile versus friendly remarks made by a confederate. The respondents' facial expressions are then evaluated for variance attributable to the experimental conditions. Because it is unlikely that all subjects experience the same, discrete, sustained emotion during a particular condition, this approach can usually show only that different facial expressions are used in presumably pleasant and unpleasant conditions or that there are overriding commonalities in facial behavior during experimental inductions.

Attempts to predict or "postdict" other information about a subject (e.g., whether he or she has many friends) have also been used to assess accuracy (Archer & Akert, 1977; Cline, 1964). This approach implies, however, that facial expressions can provide information about enduring traits in addition to transient states. Difficulties encountered in the operational definition of traits, in addition to selecting units of facial measurement, encumber this approach.

If particular changes in vocal intensity or prosody, gross body movement, head position, or speech content were infallible indicators of particular emotions, these could serve as accuracy criteria. Unfortunately, there is no evidence that these channels impart any more accurate information about emotional states than do facial expressions. The same difficulties befall investigators who seek unambiguous benchmarks for emotion in the (peripheral) autonomic nervous system or in the central nervous system.

There is, in fact, no single infallible way to determine an individual's "true" emotional state. Multiple convergent measures should be used, such as facial, postural, and psychophysiological, to gain a more reliable indication of the emotions displayed and experienced.
In addition to distinguishing positive from negative emotions, facial expression, meaning, and mood

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interpersonal deceit, few (e.g., Ekman & Friesen, 1974; Harper, Wiens, & Fujita, 1977; Lanzetta, Cartwright-Smith, & Klee, 1976; Mehrabian, 1971; Zuckerman, DeFrank, Hall, Larrance, & Rosenthal, 1979) explicitly instructed their subjects to conceal their emotions and also obtained evidence (independent of the face) that the subjects actually experienced some emotion.

These experimental tests of the extent to which the face can be used to deceive have yielded contradictory results, which are most likely due to variations in the strength or number of emotions aroused, the subjects' motivation to deceive, and their prior practice in perpetrating such deception. However, these experiments have also differed in other ways, for example, whether the subjects knew they were being videotaped, whether the observers knew that deception might be involved, whether the observers were trained, and whether channels other than facial expression were available to the observers.

**Information from the face versus other nonverbal channels**

It is clear that the face provides emotional information. What is less clear is how this information compares with that obtained from the voice, speech, and body movement. A number of studies have compared observers' judgments of an event perceived via different verbal and nonverbal "channels": audiovisual, aural alone, or visual alone. Others have focused on which of several discrepant cues (delivered across channels) are remembered or acted upon. Since the initial findings by Mehrabian and Ferris (1967), most experiments have found that the face is more accurately judged, produces higher agreement, or correlates better with judgments based on full audiovisual input than does speech content or tone of voice; this difference has been termed *video primacy* (Argyle, Alkema, & Gilmour, 1971; Bugental, Kaswan, & Love, 1970; Burns & Beier, 1973; DePaulo, Rosenthal, Eisenstat, Rogers, & Finkelstein, 1978; Zaidel & Mehrabian, 1969). Video primacy is especially apparent when speech content is filtered (Zuckerman, Amidon, Bishop, & Pomerantz, 1982). The results of a few experiments have departed from the Mehrabian and Ferris (1967) findings and have suggested that the face was less important than another channel was (Berman, Shulman, & Marwit, 1976; Shapiro, 1972) or that the channel cue varied with the observer (Van de Creek & Watkins, 1972). The factors accounting for these differences in findings are not yet known.

A study by Ekman, Friesen, O’Sullivan, and Scherer (1980) found that the relative weight given to facial expression, speech, and body cues depended on both the judgment task (e.g., rating the stimulus person's dominance, sociability, or relaxation) and the conditions in which the behavior occurred (whether subjects frankly described positive reactions to a pleasant film or tried to conceal negative feelings aroused by a stressful film). The correlation between judgments made by observers who saw the face with speech were quite low on some scales (e.g., calm-agitated) and quite high on other scales (outgoing-withdrawn).

Krauss, Apple, Morency, Wenzel, and Winton (1981) also published data on the relative weighting of verbal and nonverbal channels. Krauss and his colleagues used judgments from observers of a televised political debate and videotaped samples of interviews with college women, alone and in combination with typescripts and content-filtered speech, and they concluded that there was "no support for the widespread assumption that nonverbal channels . . . form the primary basis for the communication of affect" (Krauss et al., 1981, p. 312). As such, the Krauss et al. findings have been interpreted as corroborating those of Ekman et al. (1980) in negating video primacy. However, O’Sullivan and Ekman (1983) criticized the Krauss et al. findings because (1) no independent evidence was obtained that the videotaped expressers were emotionally aroused, (2) typescripts were selected with bias toward samples rich in verbal content, (3) face and body were not isolated for videotaped presentations, and (4) the rating scales used had low ecological validity. O’Sullivan and Ekman (1983) reemphasized that the Ekman et al. (1980) data did not negate video primacy but, rather, established its dependence on context.

Studies by Bugental and her colleagues suggested that the influence of facial expression, as compared with other sources, depends on the expresser, the perceiver, the message contained in each channel, and previous experience. Children were less influenced than were adults by a smile shown by an adult female when it was accompanied by negative words and voice tone (Bugental, Kaswan, Love, & Fox, 1970). Some experimental grounds for distrusting mothers' smiles was found in a study showing that smiling in mothers (but not fathers) was not related to the positive versus negative content of the simultaneous speech (Bugental, Love, & Gianetto, 1971). Also, mothers (but not fathers) of disturbed children produced more discrepant messages (among face, voice, and words) than did parents of nondisturbed children (Bugental, Love, & Kaswan, 1971).

The whole question of how much information is conveyed by separate
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tempts to conceal facial signs of pain consistently led to decreases in both skin conductance and subjective ratings of pain, whereas posing the expression of intense shock significantly increased both measures of arousal. When the subjects were told that they were being observed by another person, they showed less intense facial expressions and correspondingly reduced autonomic responses and subjective ratings of pain, even though they received no instructions to inhibit their responses (Kleck et al., 1976).

These findings can be interpreted in various ways (see Lanzetta et al., 1976). Before concluding that facial feedback was directly and causally related to the observed changes in arousal, it would be necessary to rule out the possibility that some other strategy used by the subjects might have affected (or comigrated) both their facial expressions and emotional experience. It is also not clear that the effect is specific to facial versus bodily signs of emotion. Nevertheless, these findings suggest that overt facial expression is often correlated with intensity of emotional arousal. Evidence that facial feedback can determine which emotion is experienced is far more tenuous.

There are ample neuromuscular pathways by which facial activity can mediate emotional experience, including exteroceptors in the superficial layers of facial skin, distention and thermoreceptors in the deeper facial skin, and possible spindle organs in facial muscle tissue sensitive to the state of contraction. The studies to date must be seen only as very weak tests of a facial feedback hypothesis. Demand characteristics and possible effects of comediating systems (cognitive or other) for both facial action and ANS measures cannot be discounted. One real test of the facial feedback hypothesis – providing subjects with “simulated” multichannel facial feedback to trigeminal afferent fibers – is technologically infeasible at this time. Clinical evidence is probably not useful, as studies of changed emotionality in facial hemiparetics are confounded with depressive reactions secondary to disability.

Finally, the studies to date have underestimated the impact of external, social feedback, that is, the micromomentary reactions of conspecifics to an individual’s facial displays. From this perspective, the visual, tactile, or auditory feedback from others’ reactions may represent an additional basis for the individual’s appraisal of emotion or even the principal basis, according to those who emphasize the socialization of emotion (Lewis & Michelson, 1982).

Although other nonverbal channels also communicate emotion and contribute to its experience, the face has a centrality and a universality in this regard that compel our attention – not only as scientists but also as friends, lovers, parents, and casual observers.

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