

Universals and Cultural Differences in Facial Expressions of Emotion¹

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Does a particular facial expression signify the same emotion for all peoples? Or does the meaning of any facial expression depend upon the culture of the expressor and the observer? Does an expression composed, for example, of a raised brow, widely opened eyes, and a dropped-open mouth always signify surprise, or only for Americans, or only for certain Americans? Might the same facial expression signify sadness for Japanese and anger for Chileans, and have no emotional connotations whatsoever in some other culture? A long-continuing dispute has been waged over the question of whether there are universal facial expressions of emotion or whether facial expression of emotion is specific to each culture.

The argument stems from differing theoretical explanations of how facial muscular movements become related to emotional states. Most universalists maintain that the same facial muscular movement is associated with the same emotion in all peoples through inheritance. Relativists view facial expression as in no way innate,

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but akin to language and learned within each culture; therefore, only through a highly unlikely coincidence would a facial expression be found to have the same emotional meaning in two independent cultures.

Darwin (1872) proposed that universal facial expressions of emotion are inherited. He reasoned that at some early time in history certain facial movements were acquired to serve some biologically adaptive function, and that over countless generations their association with emotion became innate. They are now vestiges of once biologically useful movements which do communicate feelings, but which do not have as their primary purpose the "expression" of an inner state to another person. Floyd Allport (1924) agreed with Darwin's claim of universals but modified Darwin's theory as to their origin. Allport succinctly described his basic difference with Darwin as follows: "Instead of the biologically useful reaction being present in the ancestor and the expressive vestige in the descendant, we regard both these functions as present in the descendant, the former serving as a basis from which the latter develops" (p. 215).

Tomkins (1962, 1963), the most recent theorist to posit universals in facial expression, has developed the most complex and comprehensive theory to date of facial expressions of emotion. While Tomkins's main emphasis is upon the primary affects, which he considers innate, he also provides some discussion of the variables responsible for learned differences in facial expressions. Of the facial universalists, Tomkins is the least absolute; although he stresses universals, his formulation also suggests cultural variations in these innate facial expressions.

The culture-specific view received early support from Klineberg's (1938) descriptions of how the facial expressions described in Chinese literature differed from the facial behaviors associated with emotion in the Western world. Of the facial *relativists*, Klineberg is the least absolute; while stressing cultural differences, he did allow that there might be some few universal facial expressions of emotion (1940). Neither of the next two facial relativists has taken as moderate a view.

LaBarre (1947) claims that facial expressions have different meaning across cultures, provides a multitude of examples from

exotic cultures, and concludes, "There is no 'natural' language of emotional gesture" (p. 55). A problem with this statement is LaBarre's failure to distinguish facial expressions of emotion from facial gestures. While some facial expressions of emotion can also be used as intentional communicative gestures to convey an explicit message (e.g., the smile), many facial gestures are independent of the facial behaviors usually considered as relevant to emotion. Such gestures as the head shake "no," raising one eyebrow, winking, etc., may well be culturally variable, while facial expressions of emotion are not. Darwin (1872) mentioned the need to distinguish between facial expressions of emotion, which are innate and universal, and facial gestures, which are learned and therefore culturally variable.

Perhaps the best known writer arguing today for the culture-specific view of facial expressions is Birdwhistell (1970). In describing the history of his own work, Birdwhistell wrote,

When I first became interested in studying body motion . . . I anticipated a research strategy which could first isolate universal signs of feeling that were species-specific. . . . As research proceeded, and even before the development of kinesics, it became clear that this search for universals was culture bound. . . . There are probably no universal symbols of emotional state. [1963, p. 126]

Birdwhistell cannot admit the possibility of universals in facial expressions and maintain his major central claim that facial and body behavior is a language, with the same types of units and levels of organization as spoken language, and is appropriately studied by linguistic methods.²

Until very recently there have been no data to resolve this dispute; each side has had to resort to anecdotes and/or systematic observations to buttress its view. The culture-specific or relativist view has been the most popular within psychology, perhaps because of antagonism toward theories which allow for innate determinants. Further, the relativist view was more congenial with the

2. Dittmann (1971), in a recent critical review of Birdwhistell's work, shows how current research on both facial expression and body movement contradicts Birdwhistell's hypothesis that this phenomenon is a language. In large part our research which will be reported in the "evidence" section of this article is a direct refutation of Birdwhistell.

impression that decades of psychological research had failed to show conclusively that facial expressions provide consistent information about emotion (cf. Hunt, 1941; Bruner & Tagiuri, 1954; Tagiuri, 1968). This interpretation of the literature has recently been substantially refuted by Ekman, Friesen, and Ellsworth (1971). The growing body of research in ethology and the increasing reputability of theories which allow for innate determinants have begun to challenge the relativist view, but the ethologists also have lacked systematic evidence of universals in facial expressions.

The purpose of this article is to provide a theoretical framework which reconciles the two sides of this controversy, and to present a series of studies from our laboratory which conclusively demonstrate the existence of universal facial expressions of emotion. First, however, we will give a short account of how we became interested in this problem.

THE DEVELOPMENT OF OUR VIEWPOINT

When we began to plan our cross-cultural research, we had done very little study of facial expressions even within any one culture. Our emphasis had been on the study of body movement in the United States. If we had a bias at the outset, it was against universals, for we were influenced by the predominant view within psychology.

Prior to planning our cross-cultural research, we had the good fortune to be loaned a large corpus of motion picture film taken by Carleton Gajdusek and Richard Sorenson of the National Institutes of Neurological Diseases and Blindness, showing the behavior of members of two different preliterate cultures in New Guinea, the South Fore and the Kukukuku (Gajdusek, 1963; Sorenson & Gajdusek, 1966). This film had been recorded over close to a 10-year period. The two cultures were very different and, at least in the early film records, few of the people shown had had much contact with Western cultures or with each other. We spent about six months inspecting the facial behavior shown in this film, utilizing slowed- and stop-motion procedures. We were struck by two "findings," which suggested that *both* the universal and relative views on facial expression might be correct. There were some facial behaviors which appeared to be very similar in both cultures, and

which we felt we could correctly interpret as showing the same emotion as we had observed in U.S. subjects. There were also some facial behaviors which appeared in the films of one culture but not in the other, or which occurred in very different contexts, seemingly quite different from what we had observed in our own culture. Occasionally there was enough contextual information in the film records to suggest that our interpretations of the facial expressions of emotion were correct, and occasionally Gajdusek or Sorenson was able to provide information about what had happened before or after a given scene which corroborated our judgments of the facial expressions.

Near the end of this period of time, Silvan Tomkins visited our laboratory. We showed him some short samples of the facial behavior from each of the two cultures, providing him with no information about either of the cultures. Tomkins inferred many aspects of the differences between the two cultures in child rearing, marital practices, and adult-adult interaction, which we knew to be correct from information provided by Gajdusek and Sorenson. Tomkins showed us how he thought he made his inferences, based upon the frequency of occurrence of specific facial expressions of emotions, sequences of emotional expressions, the context in which facial expressions were shown, etc. Equally important, he pointed out some of the specific facial muscular movements upon which he based his interpretations.

These experiences convinced us that there must be both universal and culture-specific facial expressions. We set about developing a theoretical framework which could explain the occurrence of both, thus reconciling the differences in the past controversy over this issue. A briefer, less complete version of the theory to be described here was written prior to initiating any of our research, although the presentation which follows is informed by our own findings and those of others as well as by argument with colleagues about the phenomena. We owe a debt to the generosity of Gajdusek and Sorenson for lending us their films, and also for their cooperation in studies we later pursued among the South Fore of New Guinea. We are indebted to Tomkins also, not just for his wisdom, but for his interest in the research we were planning and his ability to show us some of the facial movements which distinguish among emotions.

A NEURO-CULTURAL THEORY OF FACIAL EXPRESSIONS OF EMOTION

We believe (Ekman, 1968; Ekman & Friesen, 1967, 1968, 1971) that universals occur through the operation of a facial affect program which specifies the relationship between distinctive movements of the facial muscles and particular emotions, such as happiness, sadness, anger, fear, etc. Cultural differences in facial expression occur (a) because most of the events which through learning become established as the elicitors of particular emotions will vary across cultures, (b) because the rules for controlling facial expressions in particular social settings will also vary across cultures, and (c) because some of the consequences of emotional arousal will also vary with culture.

We have called our theory *neuro-cultural* because it emphasizes two very different sets of determinants of facial expressions, one which is responsible for universals and the other for cultural differences. *Neuro* refers to the facial affect program—the relationships between particular emotions and the firing of a particular pattern of facial muscles. This program, as we will explain, is at least partly innate, and can sometimes be activated with relatively little prior cognitive processing or evaluation. *Cultural* refers to the other set of determinants—most of the events which elicit emotion, the rules about controlling the appearance of emotion, and most of the consequences of emotion. These, we hold, are learned and vary with culture. Some of the learning experiences which establish elicitors, rules about control, and consequences are constant within a culture. Others, however, vary within a culture, for in addition to the neural determinants of facial expressions of emotion (common to all humans) and the cultural determinants (common within a culture but responsible for differences across cultures) there are psychosocial determinants of facial expressions of emotion. These determinants are responsible for differences between subcultures, social classes, age groupings, sex roles, and families, and are necessary to explain how facial expressions of emotion vary with personality. We will not discuss psychosocial considerations, however, both because they are not fundamental to the question of universal facial expressions, and because both data and theory on these matters are less developed.

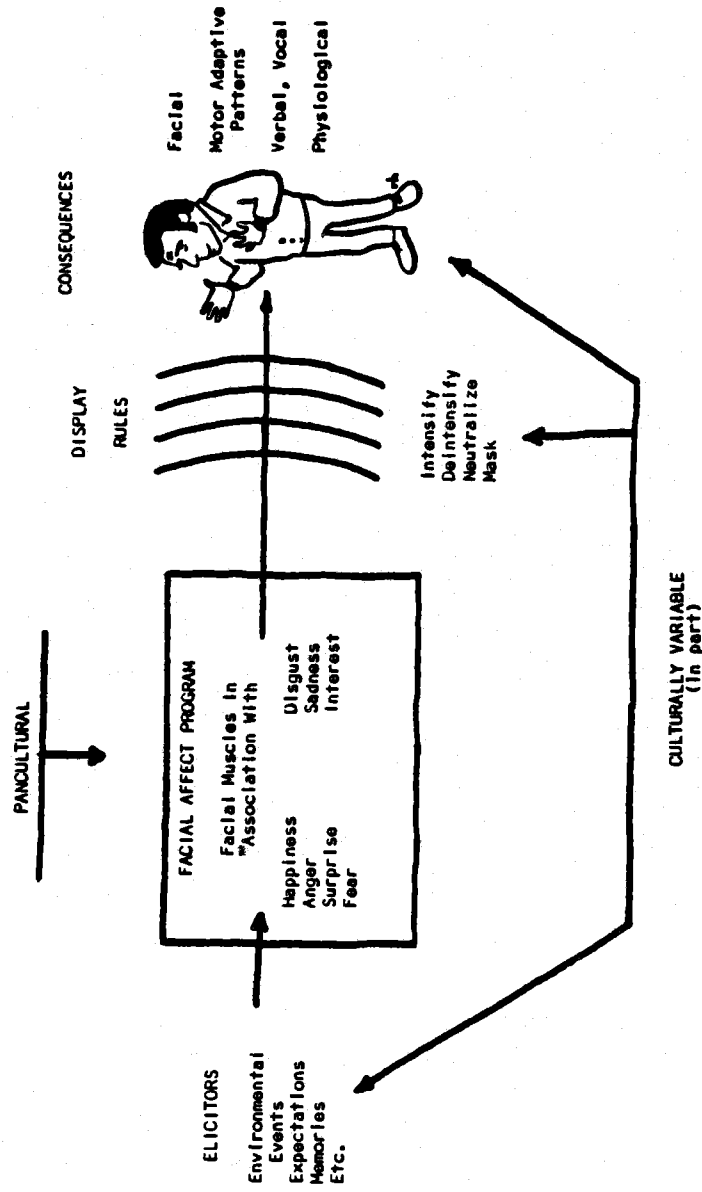


FIG. 1. Copyright © 1972 by Paul Ekman.

The term *neuro-cultural*, then, is meant to convey the two sets of determinants, and the interactions among them, which we will emphasize in explaining how universal and culture-specific facial expressions occur. Figure 1 illustrates the parts of our formulation we will discuss.

Elicitors

Emotional reactions to most events are learned, and learned in such a fashion that the elicitors will often vary with culture. All, or almost all, of the *interpersonal* elicitors of particular emotions are socially learned and therefore most will vary with culture. Some of the possible exceptions are the cry of distress in response to the mother's absence in the neonate and the fear face shown to strangers at a particular point in early infancy. More cross-cultural data on early infant facial responses to interpersonal events are needed to resolve this question.

There are certainly some *noninterpersonal* events which universally elicit a particular facial expression; e.g., tissue damage, a sudden loud noise, a bad smell, etc. For example, the nose and mouth movements in response to a bad smell or bad taste are universal. However, the disgust face is also elicited by interpersonal actions which do not involve taste or smell, and whether such a particular interpersonal action is disgusting depends upon social learning. Similarly, the startle-surprise face is elicited universally by a sudden loud sound, but which interpersonal actions are surprising depends upon social learning.

Our view of elicitors agrees with that of the relativists, and disagrees with that of some universalists. Darwin, Tomkins, and, most recently, Eibl-Eibesfeldt have claimed universal interpersonal elicitors of facial expressions. Eibl-Eibesfeldt (1970) writes of interpersonal "releasers" of facial expressions of emotion in humans. We are not as convinced as he that there is now conclusive evidence of this. Tomkins also argues for unlearned, interpersonal elicitors of facial expressions of emotion, but unlike Eibl-Eibesfeldt, he emphasizes that social learning introduces many more elicitors for each emotion. It is Tomkins's theory which led us to propose that most of the elicitors of facial expression are socially learned and

may be expected to vary with culture and with social groupings within a culture; and, by late childhood, these socially learned elicitors will by sheer number overwhelm any possible unlearned elicitors. Presumably on this point relativists and most universalists would agree.

A common pitfall in cross-cultural observations of facial expressions of emotion is to forget or ignore this variability. All too often a common emotional state is inferred simply because the same event was compared. For example, at funerals Culture Y might show down-turned, partially open or trembling lips, inner corners of the brows drawn together and up, and tightened lower lids (the sad face), while Culture X might show up-turned, partially opened lips, deep nasolabial folds, wrinkling in the corners of the eyes, and bagging of the lower eyelid (the broad smiling face). Before declaring that the facial expression of sadness varies across these two cultures, it would be necessary to verify that the stimulus *funeral* normatively elicits the same emotion in the two cultures rather than being an occasion for sadness in one culture and happiness in another. It would also be necessary to ascertain whether the norms or habits regarding the control of facial expressions in this particular setting are the same or different in the two cultures being compared.

We believe that some of the relativists' observations of differences in facial expression across cultures are questionable because they did not sufficiently consider that the same event may have elicited different emotions across cultures. It would be a simpler world, not just for the relativist, but for the universalist as well, if all elicitors were pancultural. Our claim that most elicitors will vary with culture not only opens a loophole for the universalist to discount the observations of the relativist, but complicates the task for the universalist who attempts to substantiate his claim through observations of spontaneous facial expressions across cultures. Both universalist and relativist must obtain evidence, independent of facial expressions, that the events they are comparing elicit the same emotion across these cultures, or they will not obtain crucial data. If we are correct that most of the events which elicit emotion vary across cultures, this is no easy task. And, as we have mentioned, establishing that the same stimulus elicits the same emotion is not

sufficient; attempts to control facial behavior and consequences must also be considered in the design of the research.

Facial Affect Program

An emotion elicited by some event, the nature of that event typically varying with culture, activates the facial affect program.³ This program links each primary emotion to a distinctive patterned set of neural impulses to the facial muscles. When anger is elicited, one set of muscular movements will be triggered; when fear is elicited, a different set of muscle movements will be triggered, etc. It is this program which we claim is constant for all human beings. What is universal in facial expressions of emotion is the particular set of facial muscular movements triggered when a given emotion is elicited.

We refer to "triggering a set of muscular movements," or a "patterned set of neural impulses to the facial muscles," rather than "movement of facial muscles," or "changes in facial appearance," because we will presently postulate that learned habits about controlling the appearance of the face (display rules) can and often do intervene between the triggering of the facial muscles by the facial affect program and a visible change in facial appearance. It is beyond our expertise, and perhaps beyond current knowledge in neurophysiology, to speculate about where the facial affect program might be located in the brain. Our formulation does, however, depend upon certain minimal assumptions about brain functioning, and it might be well to make them explicit, so that those expert in neurophysiology can more readily determine if our assumptions are contradicted by current knowledge.

1. Cognitive processing of the eliciting stimulus may be more or

3. We have adopted the term *program* from Tomkins, although he included not only muscular facial behavior but also vascular responses, breathing, etc., within his description of the affect program. The term *program* is meant to describe a neurally coded set of instructions, or information, relating different sets of events. We hypothesize that these instructions specifying particular facial muscular movements for each emotion are genetically inherited, amplified, and elaborated by species-constant learning, and subject to suppression by species-variable social learning. The suppression, or overriding, of the affect program, on a habitual or occasional basis, will be discussed shortly under the rubric *display rules*.

less involved as a prerequisite for the activation of the facial affect program. It seems logical to expect that some of the noninterpersonal elicitors (in particular, those which are universal elicitors of facial expression) will activate the facial affect program with little or no prior cognitive processing, sorting, considering, etc. Affective responses to these elicitors may well be reflexes, or like reflexes. Interpersonal elicitors (in particular, those which are socially learned) probably involve at least some cognitive processing prior to the activation of the facial affect program. Presumably, the more complex or subtle the interpersonal event, or the more recent the social learning which established that elicitor, the more cognitive activity will precede the activation of the facial affect program. For example, a sudden loud noise may activate surprise in the affect program without much prior cognitive processing; but for the news of the day to be surprising, more cognitive processing of the input is required prior to the activation of the facial affect program. In both cases cognitive activity would occur, the difference being in its extent prior to the activation of the facial affect program.

2. Habits regarding the control of facial appearance (soon to be discussed as display rules) can interfere with the operation of the facial affect program, early or late in a sequence of internal events, in one of four ways: (a) they can prevent activation of the facial affect program with or without also preventing any other registration of emotion; or (b) if the facial affect program has been activated, they can prevent triggering of the facial muscles; or (c) if the facial muscles have been triggered, they can either interrupt the muscular contractions, making the appearance changes quite brief, or diminish the extent or scope of the muscular contractions, making the changes in appearance less pronounced; or (d) whether or not the facial muscles have been triggered by the facial affect program, these habits can override and thus mask with a different set of muscular contractions those directed by the affect program. We suggested earlier that the innate noninterpersonal elicitors, as well as those established by species-constant learning or very early learning experiences, would ordinarily activate the facial affect program with little or no prior cognitive processing of the eliciting stimuli. It would be logical to expect that when these elicitors are involved, habits to control facial appearance would tend not to

prevent activation of the affect program or block firing of the musculature, but more often the facial musculature would actually start to move before the control was accomplished by interruption or overriding. The same logic would suggest that for the culture-specific elicitors, where more cognitive activity precedes the activation of the facial affect program, there would be more opportunity for habitual controls of facial appearance to operate before there is any movement of the facial muscles, by preventing the activation of the facial affect program or by preventing the neural impulses, once triggered, from reaching the facial musculature. When the control of facial appearance results from well-learned habits rather than from deliberate consideration and decision, then it is more likely that the habits will operate to prevent activation of the affect program or block neural impulses from reaching the facial musculature rather than interrupting the facial muscular movement or overriding it with another facial movement.

3. Both voluntary decision and habits about the proper or expected display of affect can, without activation of the affect program, fire the facial muscles to produce visible changes closely resembling those occasioned by the facial affect program.

The facial affect program as we conceive of it links each emotion to a different pattern of neural impulses to the facial musculature. It is necessary to attempt to explain how the particular linkages came about. For example, why are the brows raised in surprise and lowered and drawn together in anger? Why does the program not contain just the reverse linkage? The relativists, who dispute the notion of a facial affect program, would not expect an invariant linkage; for them surprise might be shown with a lowered brow in one culture and with a raised brow in another. A plausible account of how a particular set of invariant linkages might have originated will make the postulation of an affect program more persuasive.

A number of theorists (Darwin, 1872; Allport, 1924; Huber, 1931; Andrew, 1963, 1965; Tomkins, 1962, 1963) have considered this question and have offered somewhat different explanations. We will distinguish four related and nonexclusive alternative accounts of the origin of the linkage between particular facial muscular movements and particular emotions.

1. The physiological-anatomical construction of the human organism requires certain movements of the facial musculature in response to certain stimuli in order to perform actions necessary for life. The facial movement is part or all of a specific adaptive pattern, and that pattern itself could be considered the emotion or its prototype. Let us take the example of the facial muscular movements anatomically required to regurgitate matter from the oral cavity. A specific event, some trouble with matter in the oral cavity, is followed by regurgitation and there is a facial muscular movement which is part of regurgitation. Some theorists would call that facial muscular movement during regurgitation the emotion of disgust. For others it is the prototype for disgust; it is the basis for the development of disgust. In the next step in the development of the emotion, some stimuli will become anticipatory cues for the total action pattern in question, and after a period of learning, these anticipatory events will regularly elicit all or part of the facial muscular action without performance of the total adaptive pattern. Returning to our example of disgust, bad tastes or bad smells or strange-looking food will, through learning, become elicitors of the disgust face, without any regurgitation occurring. All members of the species will have such anticipatory learning experiences, although the particular stimuli which become established as elicitors will vary depending upon the circumstances of the learner. The next step in the development of the emotion is that, through social learning, objects, ideas, persons, personal actions, etc., which are analogically or associatively related to the original elicitor or the anticipatory elicitors, will now call forth the facial muscular response. In terms of our example, an immoral idea may "smell fishy" and become through social learning an elicitor for the disgust face. Theorists have differed in terms of (a) whether the whole sequence or only the last step is called an emotion; (b) whether the whole sequence is innate, or only the first part, which requires the muscular movement for an adaptive action; and (c) whether the communicative value of the facial muscular movement in informing others about the inner state and probable action of the person is considered to play any role in this muscular pattern becoming innate.

2. This explanatory principle is quite similar to the preceding

one; it differs only in that the facial muscular action which is physiologically-anatomically required is part of a less specific adaptive sequence. Let us take the example of pressing the lips tightly together during great physical exertion. This movement is considered to be part of an adaptive sequence in which the tight pressure of the lips helps to force air back toward the lungs to prevent rupture of the capillaries during exertion. The facial muscular movement of closed-mouth lip pressure is not only the prototype of an emotion; while it will occur during attack and on that basis is seen in the anger facial expression, it will also occur when a person lifts a heavy object. In this sense, this facial action differs from the regurgitation facial action where the facial muscular movement is relevant only to the act of regurgitating; the lip closure occurs with attack but it also occurs with any physical exertion. It is part of a less specific adaptive action. All that is necessary to account for the presence of this facial movement in the anger facial expression is its physiological-anatomical necessity during attack. Through learning, this facial action will be elicited by events which anticipate the likelihood of attacking; and, again through social learning, other events, related analogically or associatively, will elicit this component of the anger face, when no attack subsequently occurs. As with the first principle, theorists disagree about how much of this is inherited, at what point to call the facial muscular movement an emotion, and whether the communicative value of the facial movement is relevant to its becoming innate.

3. Certain facial muscular movements are innately associated with emotions because of their survival value in signaling the intention of the organism. This principle differs from the first two in that the communicative value is primary in the association of a facial muscular movement with an emotion. However, like the first two, this principle postulates that the movement is not an arbitrary one, but part of an adaptive pattern, namely the early or preparatory part of the total action pattern; it serves to signal what is coming next, or the intention of the organism. The raised upper lip is part of the anger face in man and other animals because of its signal value, namely, the intention to bite.

It would be possible to develop this principle solely in terms of learning, assuming nothing more to be innate than that the lip is

raised in biting, and prior to biting. Those who bite when they attack would learn through the response of others to raise the lip as a warning. But that is not how this principle has been explained by past theorists. Their assumption has been that over the course of evolution this action has become innate. When the organism is prone to attack, this facial muscular movement will occur, and through learning, other events will become established as elicitors of this response, much as we have outlined for the first two principles.

4. Certain facial muscular movements are programmed for a particular emotion because they are the opposite of other facial appearances (these other appearances having been programmed according to one of the first three principles). Two different explanations have been offered as to why an opposite movement would be made: (a) when an emotion is experienced which is opposite to another emotion, it is "natural" to assume an opposite facial appearance (Darwin's principle of antithesis); (b) a facial movement which stands in marked contrast to all other facial movements has a distinctive signal value. Some theorists explain the smile in happiness by this principle as being the appearance most unlike all of the negative emotion appearances; other theorists explain the smile according to one of the three other principles.

In integrating past speculations about the development of a facial affect program, we have outlined four alternative, nonexclusive views. Certainly much more information is needed about the early development of facial expressions in humans and in other animals. We have presented these speculations about the origins of a facial affect program only to indicate that there are plausible, if crude, explanations available. Later we will discuss in detail a body of evidence which consistently demonstrates the existence of universal facial expressions of emotion, thereby requiring the postulation of some such common facial affect program and raising the question of how invariant linkages between emotions and the triggering of particular facial muscles might originate.

In Figure 1 we have listed seven emotions within the facial affect program. This list (happiness, sadness, anger, disgust, fear, surprise, and interest) reflects both our theoretical orientation and our empirical results. The list is close to that of the emotion categories

consistently found by all investigators within Western cultures who have, over a 30-year period, attempted to determine how many categories of emotion can be judged from the face (cf. Ekman, Friesen, & Ellsworth, 1971, Ch. 13).

It is not important whether there might be one or two more emotions than those listed, or one or two less. The central idea is that there are separate emotions (and not merely pleasant and unpleasant feeling states), which have distinguishable facial appearances. Later we shall describe the specific facial behaviors which distinguish among these emotions and present our evidence to suggest that these descriptions of the distinctive facial behaviors are correct.

The facial affect program links each of the emotions listed in Figure 1 with a distinctive pattern of neural impulses sent to the facial musculature which can result in a distinctive facial appearance. These emotions can be considered primary or basic states. It is necessary to distinguish them from what can be called secondary, blend, or multiple emotions. Without postulating the existence of blended expressions which present various mixtures of the primary emotions, we would not be able to account for the host of complex facial expressions of emotions and of emotion words, which far exceed the small list of primary emotions. For example, some mixture of happiness and anger (primary emotions) could account for the blend emotion of *smugness*.

Plutchik (1962) began research on the language of emotion to show that a limited number of primary emotion labels could account for a large number of complex blends, but that research was not completed. There is no definitive evidence on either the vocabulary or the facial expression of emotion to verify which are primary and which are blends. Nummenmaa (1964) and Ekman and Friesen (1970) did, however, obtain evidence to show that blends of facial expressions do occur, finding that still photographs of the face can convey information about two primary emotions to observers and verifying which parts of the face conveyed each of the primary emotions. Let us consider briefly how blends may be manifest in facial expressions, and then, relevant to our formulation here, whether blends are likely to be universal or culture-specific.

Blends may be manifest in four ways. (a) The very rapid succession of two primary facial expressions of emotion may for the

observer appear as a blend. (b) There may be a division of labor across different muscle groups so that one emotion is shown in one area of the face while another emotion is shown in another facial area. (c) There may be a division of labor across the right and left sides of the face, so that one side shows one emotion, and the other side the other emotion. (d) Within each muscle group there may be a movement which is not the result of either of the primary emotions involved, but the product of the two sets of muscular movements which has an appearance dissimilar from each. The investigators who have studied this problem, including ourselves, have examined only the second type of blend; the other types are theoretically possible, but to our knowledge no one has demonstrated their occurrence.

It is likely that there is much more cultural variability in blend facial expressions than in facial expressions of primary emotions. Let us consider how each of three conceivable routes for the appearance of a blend suggests that blends are probably culture-specific.

1. An event may elicit two emotions, not one; winning the sweepstakes might commonly elicit both surprise and happiness rather than either separately or in time-separated sequence. We have argued that most elicitors of facial expression will vary with culture, though a few may be invariant and some may call forth the same emotion in any group of cultures being studied. The odds are against finding events which elicit the same primary emotion across two cultures, and the odds are even greater against finding events which will elicit the same blends across any two cultures.

2. Efforts to disguise a facial expression by overriding a felt emotion with the appearance of a presumably more acceptable facial expression may result in a blend. If we are trying to conceal our anger with a smile we may have an anger-happiness blend, and look smug. In order for blends due to masking to be the same across two cultures it is not only necessary that in both cultures an event elicit the same primary emotion, but that in both cultures the situation call forth the same display rule, specifying masking with the same overriding expression.

3. Feelings we have learned about our feelings may result in a blend. An event may elicit one emotion, and we may have a learned reaction about having that particular emotional response to that

particular elicitor; if the feeling about the feeling occurs quickly, the face may show the blend of both the original and the reactive feeling.⁴ For example, a teacher becomes angry at an obstreperous child, immediately feels disgusted at himself for becoming angry, and shows the anger-disgust blend. In order for blends due to feelings about feelings to be the same across two cultures it is not only necessary that in both cultures an event elicit the same primary emotion, but that in both cultures habits associate the same feeling with the primary emotion.

While it may be difficult to ascertain in any given instance the basis of a particular blended facial expression, we must expect, then, that when facial expressions are compared across two or more cultures in a situation which elicits at least one common emotion for all the cultures being examined, it is probable that the blend will be more culturally variable than the expression of a single emotion. This is not to suggest that when the same blend occurs in two cultures it must look dissimilar; it could be the same, combined of the same muscular movements, or it could differ, reflecting a different anatomical combination. For example, the fear-surprise blend can occur with the muscular movements for surprise shown in the lower half of the face and eyes, and fear displayed in the brows, or with fear shown in the lower face and surprise in the eyes-lids and brow. It may be that there are particular blends which occur with a high frequency in one culture and have their own name, but which are rarely seen in another culture, are not named, and would not be readily interpreted.⁵

In the next two sections of our discussion (display rules and consequences) we will elaborate on the mechanisms which underlie the second and third explanations of blend faces. We will in those discussions emphasize that both depend on habits which are socially learned and will often vary across cultures as well as within cultures.

4. While some feelings about feelings may be shared within any one culture, presumably they also vary considerably among different members of a culture. The habitual feelings about feelings which characterize a particular individual are probably related to family background and early personal experience and are explicable in terms of personality.

5. It is our impression from our study of Gajdusek and Sorenson's films that the Kukukuku of New Guinea often show a happy-sad blend which is rarely seen in other cultures.

*Display Rules*⁶

Returning to Figure 1, an elicitor, which usually will be culturally variable, activates the facial affect program, which is universal; but before we can deal with the observable facial appearance, we must consider an interference system, which we have called a system of display rules. The idea that man can and typically does exercise some control over his facial expressions of emotion has been frequently asserted by past writers, who suggest that this circumstance may obscure findings within as well as across cultures (Murphy, Murphy, & Newcomb, 1937; Klineberg, 1940; Hebb, 1946; Asch, 1952; Honkavarra, 1961; Plutchik, 1962; Tomkins, 1962, 1963; Ekman, Friesen, & Ellsworth, 1971). Most investigations, however, have been conducted as if facial expression of emotion were an involuntary output system. We (Ekman, 1968; Ekman & Friesen, 1969a, 1969b) have described four *management techniques* for controlling facial behavior: (a) intensifying a felt emotion; (b) deintensifying a felt emotion; (c) neutralizing a felt emotion; and (d) masking a felt emotion with the facial configuration associated with a different emotion. We have hypothesized that these management techniques for controlling facial appearance are operative in most social situations. The concept of *display rules* concerns what has been learned, presumably fairly early in life, about which management techniques to be applied by whom, to which emotions, under what circumstances. Display rules may take account of four characteristics in specifying when and by whom a management technique is to be applied: (a) static personal characteristics (e.g., age, sex, and body size); (b) static social characteristics (e.g., ecological factors; the social definition of the situation, such as funeral, job interview, or a party; enduring interpersonal relationships); (c) transient personal characteristics

6. Our use of the word *display* may be unfortunate since we do not have in mind most of the connotations of that word as it is used by ethologists, and even they seem to vary considerably in just what they mean by a display (cf. Hinde, 1966; Lorenz, 1970; Marler, 1959; Morris, 1970). Since we already have published our ideas about the control of facial appearance under the rubric *display rules*, we are reluctant to change phrases now. It should be clear, however, that in the use of *display* we are referring only to appearance; display rules are rules about the appearance of the face.

(e.g., role, attitude); and (d) transient interaction regularities (e.g., entrances, exits; listening, talking; in play, out of play).

Display rules govern facial behavior on a habitual basis. Rarely will a person pause to consider what display rule to follow; such a pause would indicate that there is no display rule, or that something is ambiguous in the situation and the person does not know which display rule to follow. The operation of display rules is more noticeable when they are violated than when properly applied.

Some examples may help clarify and lend credence to this concept. Middle-class, white, adult, urban males in the United States follow the display rule of neutralizing or masking sadness and fear in almost all public places; their female counterparts, particularly those who are in the prematron age bracket, follow the display rule of neutralizing or masking anger. In a business setting where two executives have been competing for a job promotion, the display rule specifies that when they face each other, their peers, and their employer, the winner should deintensify expressions of happiness, while the loser should deintensify, neutralize, or mask with happiness the facial expression of sadness. At beauty contests the losers at the moment of announcement must mask sadness with happiness. These instances of display rules are probably much too simple, omitting necessary information about the static personal and social characteristics and the transient personal and interaction characteristics which would be necessary to specify exactly when they are and are not applied. But the examples should suffice to clarify what we mean by a display rule.⁷

We believe that the concept of display rules has considerable utility both in explicating past observations and in planning new research on facial expression. The varying operation of display

7. In emphasizing cultural differences in display rules, we do not mean to imply that display rules are necessarily the same within a culture. Presumably display rules are learned primarily within the family and are subject to idiosyncratic factors. Personality differences would be manifest in atypical application of display rules (e.g., by someone who can never show anger toward a member of the same sex); in the overextensive application of particular management techniques across situations (e.g., by a histrionic person who always intensifies facial expressions of emotion, or by a poker-faced person who always neutralizes facial expressions of emotion); and in the failure to follow a socially salient display rule (e.g., by a person whose behavior is considered immature or unmannerly, and perhaps by one who would be considered to be showing inappropriate affect).

rules may well explain why past observations have been so contradictory as to whether some facial expressions are universal. There should be many differences in display rules across and within cultures. The determination of such differences should be one of the most fruitful ways to explicate the nature of cultural variations in facial expression, and is also necessary for investigators seeking evidence of universals, if the universal element of facial expression is not to be obscured by differences in display rules.

In comparisons across cultures, investigators must be wary of interpreting evidence as showing a basic difference in the muscles involved in an emotional expression, when that difference could be due to the application of different display rules in the cultures being compared. Returning to the example of the funeral discussed in connection with elicitors, let us suppose that we are comparing two cultures in which this event actually elicits sadness, and yet we observe the sad face in one culture and the happy face in another. It is possible that in one culture the display rule calls for the management technique of intensifying the expression of sadness, while in the other culture the display rule calls for masking the sad expression with a pleasant countenance. If we are not alert to the possibility of such different display rules, we can be misled into believing that sadness is a culturally variable facial expression, or that the smiling face has nothing to do with the emotion of happiness for that culture.

How can an investigator guard against drawing such mistaken conclusions? If the investigator is a relativist, how can he be certain that he has obtained evidence of cultural differences in facial expression of emotion which rule out any claim to a universal element? If he accepts our general framework, and wishes to attack the problem of delineating cultural differences in facial expression, what should he do? There are two approaches. One is to derive information about display rules without directly studying facial behavior. The other is to infer or test hypotheses about display rules by measurement of spontaneous facial behavior.

In the first approach, information could be obtained from informants by asking direct questions, or by describing scenes or events and requesting the informant to state what a person would do or look like, or to choose among different facial expressions. In

such studies display rules would be isolated by varying the information provided to the informant about various aspects of the situation in terms of the personal and social static characteristics, and of the personal and interactive transient characteristics, and asking him to determine what facial expression might be shown. For example, the informant could be told about a situation in which an employer is angry at his employee for arriving late to work; the sex of the employer and employee could be variously identified as both male, both female, or one male and the other female, and in each permutation the informant could be asked to choose from among a set of facial expressions the one most likely to occur. Literature is also a source of such information in some cultures, as Goffmann (1963) has shown. Etiquette books may list information about some of the rules of social interaction, and perhaps may also contain more specific information about display rules.

In the second approach, some measurement could be made of facial behavior in situations which vary in terms of the four characteristics listed earlier as relevant to display rules. Such measurement would be most useful if it revealed both the elicited emotion and the operation of the management technique for modifying that emotion, as dictated by the display rule. There are three possibilities for such measurement. (a) Facial micro-expressions (Haggard & Isaacs, 1966; Ekman & Friesen, 1969a) are facial movements which are so brief in duration that they are not easily seen. With slowed-motion film projection, however, they can be seen, and measurements taken. These micro-expressions are presumed to show feelings a person is attempting to conceal. (b) Aborted facial expressions, though brief like micro-expressions, do not show a full facial expression reduced in duration, but instead an interrupted movement of the facial muscles. In the aborted facial expression, slowed-motion inspection will not reveal what emotion has been interrupted; however, the occurrence of the interruptive process can be noted. (c) Our work in progress suggests that the control of the facial muscles affects the muscles in the lower face more than the muscles around the eyelids. We are currently testing our hypothesis that the appearance of the eyelids provides information about the actual felt emotion, while the lower face shows the expression dictated by a display rule.

All three of these measurement possibilities presume that the facial muscles have been fired by the facial affect program prior to interference by the display rule. In discussing the facial affect program, we suggested that a display rule could operate after the firing of the facial muscles, or before such firing occurred. In the former case, the display rule would manage facial appearance by interrupting or overriding the facial muscular movements dictated by the facial affect program; this type of control we suggested would be more likely when the elicitor is an unlearned, noninterpersonal event and the display rule was acquired late rather than early in life. In such instances, when the display rule operates by applying a management technique after the firing of the facial muscles has occurred, the measurement procedures we described should be useful. Display rules may also operate to control facial appearance before any firing of the facial muscles occurs, preventing activation of the affect program and/or firing of the facial muscles. In such instances the elicitors will tend to be socially learned, culture-specific events, and the display rules learned early rather than late in life. When the control of facial appearance is imposed prior to the movement of the facial muscles, the procedures for measuring the facial expressions we have described would not be of use.

Consequences

The last aspect of facial expression of emotion represented in Figure 1 is the consequence of emotional arousal. Some writers have considered the distinguishing characteristic of each emotion to be a single motor adaptive pattern, shown primarily in the body rather than the face; e.g., flight for fear, attack for anger, etc. This view is held by many of those studying facial behavior in nonhuman primates and is proposed also by some of those who study facial expression in man (e.g., Frijda, 1969). While we believe it is necessary to consider motor adaptive patterns for particular emotions, the view that they are either invariant for man, or the only or primary way to distinguish among emotions, or the only important consequence of emotional arousal is far too simple.

Let us distinguish six different consequences of emotional

arousal, some of which involve the face. First we have the facial behavior dictated by the facial affect program, which will occur if there is no interference by display rules. We have already described our view that these facial movements differ for each primary emotion, and are universal. They are a consequence of emotional arousal, but as we have just emphasized in our discussion of display rules, they are not a necessary consequence of emotional arousal. The second consequence is a substitute for the first; it is the masking facial behavior imposed by display rules to override and conceal the facial expression dictated by the affect program. The third consequence also involves facial expressions of emotion but it is a reactive feeling rather than an elicited feeling; it is the feeling about the feeling. For example, anger may be elicited in a given situation, and on an habitual basis the person may have a feeling of disgust about getting angry; anger is the elicited feeling, disgust the reactive feeling about the feeling. The fourth type of consequence is a motor adaptive pattern, which may involve the face and/or the body. This is an action pattern that copes with the aroused emotion or more generally is adaptive in regard to the elicitor. There are a number of facial responses which are best conceptualized as such coping or adaptive actions; they are not part of or specific to any single primary emotion expression. For example, biting the lip, sticking out the tongue, spitting, or blowing out air can occur as a consequence to several emotions. It is important to note that the repertoire of facial action far exceeds the particular muscular movements which are specific to the primary emotions; but we shall explain more about that later.

The fifth type of consequence is verbal or vocal behavior, which may consist of words or sounds describing internal states, or giving messages to another. The last consequence of emotion arousal is physiological change, in most cases presumably not observable. There has of course been considerable argument over whether physiological changes can distinguish among all of what we have called the primary emotions, and about the role of individual differences in determining which physiological variable is most reflective of emotion.

It is our view that emotions can be distinguished to a greater or lesser extent by all of these consequences. They are different

aspects of emotion as it is experienced, or can be observed or measured. In a sense they are not consequences of emotion but part of what we mean by the term *emotion*. We would not limit emotion to these consequences, for it must also include the elicitors, the affect program and other neural events, display rules and other cognitive processes involving appraisal of the elicitor, imagery, memory, etc. All of these facets have at least some importance in a theory of emotion, in the measurement of emotion, and in the phenomenology of emotional experience.

We do not believe that motor adaptive patterns, whether shown in the face or the body, are more important, central, or distinctive for each emotion than the other consequences we have outlined. Neither do we believe that most of such motor adaptive patterns are innate or, through species-constant learning, universal. There may be a few universal motor adaptive patterns and these could be found through cross-cultural studies of early infant emotional behavior, but there is no conclusive evidence for this as yet. We would expect that any such linkages between motor adaptive patterns and emotions would not be firm, but instead readily modifiable or totally replaceable by socially learned coping mechanisms. These socially learned adaptive patterns should overwhelm by force and number any possible single, built-in adaptive pattern.

Our view then is that most of the immediate behavioral consequences of an emotion—the masking facial behavior, the reactive facial behavior, the verbal-vocal behavior, and the motor adaptive patterns—are socially learned ways of coping with emotion and emotion-eliciting events. They will vary across as well as within cultures. The physiological changes which accompany emotion may be less socially programmed, although some may be subject to interference by learned habits or instituted solely by learning. And the facial expressions of emotion, we have argued, distinguish among emotions and are universal, but they can be interfered with by display rules, and elicited by culturally variable events. Let us now consider how one type of consequence, the reactive facial expressions, may complicate study of the primary, elicited facial expression of emotion.

We agree with Tomkins (1962) that people learn emotional reactions to their own emotions; e.g., once angry, we may react to

our anger with more anger, or with fear, or disgust, or happiness, etc. While these reactive emotions are reasonably stable within the behavior of a person, accountable in terms of personality, there may also be certain common feelings about feelings among members of sex, age, social class, ethnic, or cultural groups. If we draw upon our concept of display rules, we can complicate the matter by suggesting that in some instances the initial elicited emotion will not be observable in the face because of interference by display rules dictating neutralization of the appearance of that feeling, but the feeling *about* the feeling will not be affected by any management technique and will be quite apparent. Let us assume, for example, that anger is aroused by a particular elicitor and, on the basis of habit, the person feels afraid of feeling anger in the particular social setting. There may be a display rule operable to neutralize the facial expression of anger, but no display rule for the expression of fear. So he will *look* afraid, not angry. Of course all the other permutations are conceivably equally possible. The initial emotion may be shown and the reactive emotion not, or both may be shown, or both may be disguised or controlled. Tomkins (1971) did not specify these permutations, but agrees that they are consistent with his thinking.

Let us now consider how our view of consequences of emotional arousal complicates, but hopefully illuminates, cross-cultural observations of facial expression. First, the observation of different consequential behavior following or coincident with the same facial expression of emotion in two cultures should not be regarded as ipso facto evidence that the facial expression signifies different emotions. Instead such a finding would point to an important difference between the two cultures in what has been taught about how to cope with a particular emotion in a particular setting. Returning once again to our example of the funeral, let us presume the investigator to have established that the funeral is an elicitor for sadness in the two cultures he is observing, and that in both cultures there is no display rule to disguise the facial expression of sadness at funerals by the chief mourners. Now let us suppose that at the moment when the body of the deceased is buried, a very sad face is shown by the chief mourner in both cultures, but in Culture X he beats his body with his hands, while in Culture Y he reaches out to touch those

around him. Careful observation would distinguish between the pancultural sad face and the culturally variable consequences of sadness in this particular setting. It would be documentation of our claim that within and across cultures very different consequences may be learned for the same emotional state.

Our discussion of consequences of emotion suggests another more subtle source of confusion in cross-cultural observations of facial expression. The cultures compared may differ in the typically learned emotional reaction to the first emotion aroused. In the example of the funeral, though it may be known that funerals elicit sadness in the two cultures being compared, in Culture X the learned reaction to sadness among mourners at funerals may be fear, and in Culture Y, anger. If neither culture had a display rule calling for neutralization or masking of the original or the reactive facial response, Culture X would show sadness-fear, and Culture Y would show sadness-anger. That could be confusing, if the reactive emotion response followed so quickly that it was blended with the original response, changing the overall facial configuration. But it could be even more confusing; as suggested earlier, the reaction may be visible in the face when the originally aroused emotion is not. Both cultures might have a display rule to neutralize the response of sadness. In that case our observer would see fear in Culture X and anger in Culture Y.

Summary

We have suggested that the pancultural element in the facial expression of emotion is the facial affect program, which triggers a different pattern of facial muscular movements for each of a number of emotions. The activation of this affect program *can* result in a characteristic facial appearance for fear, anger, sadness, disgust, surprise, happiness, and interest for all human beings. This part of our formulation completely contradicts the theoretical positions of such facial relativists as Birdwhistell, whose conceptualizations of the cultural determinants of facial expression have, in our opinion, obscured the role of the neural determinants of facial expression, namely, the universal facial affect program.

We do not propose that this facial affect program operates in a

vacuum. On the contrary, the elicitors of the emotions, the display rules which govern facial appearance, and the behavioral consequences of emotion are all shaped by culture. We introduced the concept of display rules to describe a solely cultural mechanism which can override the affect program and control facial appearance. Our discussion of elicitors and consequences, while allowing for some universals (particular events always eliciting the same emotion and particular actions always following emotional arousal), emphasized how these would be overwhelmed by the culturally determined elicitors and consequences of emotion. Our emphasis on the enormous importance of social learning in facial expression of emotion distinguishes our theory from that of those universalists whose concept of the mechanisms responsible for pancultural expressions of emotion obscures the major sources of cultural differences in facial expression.

While the facial affect program provides the basic building blocks of facial expression, the sources of cultural variability are so many that it is exceedingly difficult to observe the common facial expressions of emotion across cultures. We have not denied these culturally variable aspects of the phenomenon, but have isolated them precisely as that and not as evidence against the existence of universal facial expressions. While our own research has been devoted to the study of universals, we regard the study of cultural differences as equally important. We believe, however, that if there are universals, the most sensible research strategy calls for their isolation first. Their description in a measurable form can then facilitate observation of how these universal expressions are modified in social life across cultures.

Admittedly, our theory goes far beyond the data which we will now present. Our findings do, however, provide very strong support for universal facial expressions, and that evidence requires *some* theoretical explanation. Our theory is such an explanation, which reconciles past contradictory theories and provides ample hypotheses to account for cultural differences. One basis for evaluating a theory is its utility in guiding research. We believe our theoretical framework to have been in large part responsible for our managing to obtain evidence of universal facial expressions. We were forewarned of the ways cultural determinants could obscure any sign of the

operation of an affect program, as will become clear in the following pages. Let us now turn to the evidence.

RESEARCH EVIDENCE ON UNIVERSAL FACIAL EXPRESSIONS OF EMOTION

An Overview

We will present a number of separate experiments which we have conducted over the past five years. While some of the data have already been published, most have not. We will also for the first time integrate findings across a number of separate studies, relating our results to the theoretical framework we have outlined.

We will consider first a study on the recognition of spontaneous facial expressions across two literate cultures, those of Japan and the United States. Japanese and American observers were asked to interpret the spontaneous facial expressions of Japanese and American subjects, judging whether the facial expressions had occurred while the subject was watching a stressful or nonstressful film. The results show that the facial expressions of the Americans were interpreted in the same way by the Japanese and American observers, as were the facial expressions of the Japanese. While this experiment clearly supported our assertion of a universal facial affect program, it had three limitations. First, the data could not demonstrate that the Japanese and American subjects had actually shown similar facial expressions, but only that whatever facial expressions were shown were interpreted similarly by observers from the two cultures. Second, since the observers had been required to judge only whether the facial behavior had been shown during stress, the results could not establish that facial expressions were universally associated with *specific* emotions, but only that the *gross* distinction between pleasant and unpleasant emotions was comparably drawn across cultures. Third, because the members of these two cultures have had considerable visual contact with each other, the evidence could not rule out the possibility that members of the two cultures had learned how to recognize each other's unique facial expressions.

The second, third, and fourth experiments each address and resolve one or more of these limitations, consistently building evidence for universal facial expressions of emotion. The second

experiment overcomes the first two limitations, demonstrating by actual measurement of the facial behavior of the American and Japanese subjects that very similar facial expressions were shown, and that these were specific emotional expressions, not a generalized unpleasant state. The third experiment addresses the second limitation, demonstrating that for happiness, sadness, anger, fear, surprise, and disgust the same facial expression is interpreted as showing the same emotion in Brazil, Argentina, Chile, the United States, and Japan. The last experiment addresses the third limitation, demonstrating that the same facial expressions are interpreted as showing the same emotions by members of two fairly isolated preliterate cultures.

Before turning to each of these experiments, we will first discuss two general methods which can be used in research on facial expression, both of which were employed in the series of experiments. One we have called a *components* approach and the other a *judgment* approach (cf. Ekman, Friesen, & Ellsworth, 1971, Ch. 6; also Ekman, 1965; and Ekman & Friesen, 1968, where these two methods were described for the study of body movement, utilizing the term *indicative* rather than *components*, and *communicative* rather than *judgment*).

In a components approach, facial behavior is treated as a response and is directly measured. There are two fundamental questions which can be answered through a components approach. Do the measurements of facial behavior differ depending upon *when* the behavior occurred, or *who* showed it? An example of the first type of question is whether the brow is more elevated when people watch stress films than pleasant films. An example of the second type of question is whether there is a difference between Japanese and American subjects in the frequency of brow elevations when watching stress films.

In a judgment approach, facial behavior is treated as a stimulus and observers are asked to judge emotion from viewing the facial behavior. There are three fundamental questions which can be answered through a judgment approach. Can observers make accurate judgments of facial behavior? Are some observers better than others? Are some subjects more accurately judged than others? An example of the first type of question is whether observers

can correctly determine which facial expressions occurred while subjects watched a stress film and which occurred while subjects watched a pleasant film. An example of the second type of question is whether females are more accurate observers than males. An example of the third type of question is whether the facial expressions of American subjects are more accurately judged than the facial expressions of Japanese subjects, regardless of the culture of the observers.

Components studies of facial expression have been rare,⁸ despite the fact that judgment studies, of which there have been many, are quite subject to confused results and error in interpretation. In fact, the judgment approach has been the *bête noire* of some investigators, primarily linguists and ethologists interested in the face, who have failed to understand what results from this method mean. The judgment approach can tell us much about the face, if the implications of positive results are clearly understood in relationship to facial components.

Let us take as an example the first experiment, shortly to be discussed in detail, in which observers in two cultures were asked to judge whether facial expressions of the subjects had been videotaped while they were watching a stress- or non-stress-inducing film. This study contains an accuracy question. Can observers determine the eliciting circumstance from samples of facial behavior? And it contains a question regarding universals. Can observers make accurate judgments only for their own countrymen?

Positive results would logically prove four propositions, two of which have nothing to do with the *judgment* of the face but pertain to the actual *expressions* shown by the face. If observers in one culture make accurate judgments, that is, if they can distinguish which facial behavior occurred during stress, then these two propositions would be proved: (a) *Facial expressions* are not random but at least some facial expressions are systematically related to an eliciting circumstance (in this case, watching stress films). If they were random, observers would make no better than chance judgment. (b) *Observers* have by some means learned prior to the experiment

8. Understandably so, because of the lack of any proven systematic method for measuring the face, and the enormous amount of time involved in taking facial measurements.

what at least some facial behaviors mean, and they share this knowledge. If they did not, their judgments would disagree.

If observers in two cultures make accurate judgments regardless of the culture of the person they judge, and if their judgments are highly intercorrelated, then two more propositions are demonstrated: (a) *Facial expressions* in both cultures are not random, but in both cultures are systematically related to the same eliciting circumstance. (As we shall see later, this is not proof that the same facial behavior necessarily occurs in both cultures.) (b) *Observers* in both cultures have by some means learned prior to the experiment what some facial behaviors mean, and must utilize the same set of interpretive rules.⁹

Let us now compare the judgment method with the components method, for findings from the two are not necessarily redundant. It is possible to obtain positive results with one method and negative results with the other, because each method has its own shortcomings. The facial behavior of members of two cultures might through measurement be shown to be highly similar, yet observers from each culture might make different judgments between the facial behavior of their own and another culture. This could occur if (a) the observers themselves (in either or both cultures) have some stereotype, not based on fact, about what facial behavior signifies when it is shown by members of the other culture; then, even though they saw the same facial behavior in the other culture as in their own, they would interpret it differently; (b) the observers (in either or both cultures) do not base their judgments on the same behaviors as those scored in the measurement procedure, but either do not know what facial behavior to look for, or respond to some other set of cues, e.g., physiognomic variations.

It is also possible for the judgment approach to provide positive findings and the components approach, negative findings. In a judgment approach, it could be shown that observers in each

9. Phoebe Ellsworth has questioned this logical inference, since it would be possible for observers in one culture to regard only the eyes or forehead and those in the other culture to regard only the lower face. If this were to occur, then it would be possible for observers in both cultures to make accurate judgments without having any shared interpretive rules, since they essentially were obtaining or selecting different parts of the face as input. We consider this possible but extremely unlikely.

culture are able to judge accurately members of both their own and the other culture, yet the measurement approach might fail to show similarities across cultures. That would occur for one of two reasons: (a) The observers were recognizing behaviors which the measurement system failed to score, perhaps because its units were too small, too large, or just irrelevant. (b) Different emotional reactions were elicited in the two cultures and were accurately interpreted by the observers as being stress reactions, but the measurement of the facial behavior permitted finer distinctions which correctly reflected those different facial expressions. For example, if the stress film elicits fear in one culture and sadness in another culture, observers might still accurately interpret both the fear faces and the sad faces as having occurred during stress, but facial measurement would reflect the differences between the fear and the sad response. It is of course possible to obtain positive results from both methods, and this is most useful not only because consistency is reassuring, but because, as will become evident when we discuss the first two experiments, somewhat different questions are asked in each.

*The Recognition of Spontaneous Facial Expressions in Two Literate Cultures*¹⁰

The basic question asked from the research materials gathered for this and the next experiment is whether there is similarity in the facial expression of emotion of Japanese and Americans. In this first experiment, the ability to recognize emotion from facial expressions of members of one's own culture is compared with the ability to recognize emotion from facial expressions of members of another culture. The accuracy of Japanese observers in judging fellow Japanese is compared with their accuracy in judging the facial expressions of Americans; and the accuracy of American observers in judging their fellow Americans is compared with their

10. This and the next experiment were collaborative studies carried out in cooperation by three research groups: my own (Ekman, W. V. Friesen, and E. J. Malmstrom), Richard Lazarus's group at the University of California, Berkeley (R. C. Lazarus, J. R. Averill, and E. M. Opton, Jr.), and Masatoshi Tomita's group at Waseda University, Tokyo (M. Tomita and M. Kodama).

accuracy in judging the facial expressions of Japanese. The second related question asked in this experiment is whether the interpretive rules for judging facial expressions can be inferred to be the same regardless of the culture of the observer. Are the judgments of the Japanese and Americans positively correlated, or is a facial expression which is accurately judged by one culture inaccurately judged by another, or judged at chance?

The relativist, who holds that all facial expressions are culture-specific, would expect a different facial "language" in each culture, and would consider it unlikely that a Japanese would know or understand American facial language, or vice versa (unless he had learned it from observation, a consideration we will discuss later). Thus, the relativist would predict: (a) observers of one culture may accurately judge the facial expressions shown by members of their own culture, but not those shown by members of another culture; and (b) a comparison of the judgments made by observers from the two cultures will yield no correlation or a negative correlation. We made the opposite predictions: (a') observers will be *no* more accurate in judging the facial expressions of members of their own than of another culture; and (b') the judgments made by observers from the two cultures will be highly positively correlated.

The sample of facial expressions of emotion to be shown to the observers in each culture was crucial. Our theoretical framework suggested that it would be difficult to obtain evidence of the universal aspects of facial expression unless the facial expressions were drawn from a situation which met three criteria: by and large, the same emotions must be elicited in both cultures; display rules to disguise the facial behavior must be inoperative or similar in their operation in the two cultures; and behavioral consequences which might obscure the facial expressions of emotion must be unlikely. A set of stress-inducing films, shown to both Japanese and American subjects, was the elicitor selected. This elicitor was chosen because Lazarus (Lazarus, Opton, Tomita, & Kodama, 1966) had obtained evidence that these films elicited a comparable verbal report of emotional arousal from Japanese and American subjects, and although there was some ambiguity in the psychophysiological measures of arousal, those data were interpreted (Averill, Opton,

& Lazarus, 1969) as allowing the inference that the stress films have common eliciting properties in these two cultures.

We were also attracted to the idea of studying Japanese subjects because of the popular belief in the inscrutability of the Japanese and the difficulty that Westerners have in seeing beneath a presumed mask. It seemed particularly interesting to attempt to obtain evidence of universals for this sample. The popular idea that the Japanese masks with politeness his facial expressions of emotion emphasized the need to try to sample facial behavior when display rules would not be operative. We attempted to accomplish this by recording the facial expressions of the subjects, in both the United States and Japan, while they were seated alone in a room rather than in the presence of others; though aware that psychophysiological measures (GSR and heart rate) were being taken, they did not know that a continuous video recording of their facial expression was being taped. Showing a film to a person while he sat by himself also seemed to be the type of elicitor unlikely to call forth behavioral consequences which would obscure the facial expressions of emotion. The main coping response we expected was for some subjects to turn away from the source of the stress, the movie screen.

One more aspect of this experiment should be emphasized at the outset, for while it is a source of strength it also is a weakness of the study. The facial expression of emotion shown to the observers in these two cultures was *spontaneous* behavior, i.e., facial behavior which occurs without prompting or request by the investigators. The virtue of utilizing spontaneous behavior rather than, for example, poses of emotion is that the behavior judged is behavior which is intrinsic to each culture. There is no need to worry about whether the results are limited to some strange set of faces "cooked up" by the investigator. What is sacrificed by this use of a spontaneous situation is specificity of emotional information. While we know which behaviors occurred during the stress film and which during a neutral film, we have no way of specifying when the subject might have felt disgusted or angry or sad or afraid, etc. This is the usual shortcoming of spontaneous eliciting circumstances; by contrast, with posing it is possible to specify exactly what face represents what emotion, but this is at the cost of having to contend with the question of whether the faces are artificial or atypical.

Twenty-five subjects were recruited from Waseda University in Japan and 25 from the University of California. An investigator from their own culture explained the experiment and attached the GSR and heart rate leads. The subjects viewed a 23-minute film containing both neutral material (a travelogue) and a series of Lazarus's stress-inducing films. The videotape records of their behavior were too long to show in their entirety to observers in each culture. Instead, we selected 1 minute from the record taped during the neutral film and 1 minute from the record taped during the stress series for each subject; the same sampling points were selected for all subjects.

Two kinescopes were made for each culture of these 1-minute samples of facial expression shown during stress and neutral film watching. Each kinescope contained a 1-minute sample of each of the 25 subjects from that culture, but it showed a given person in only one of the two conditions, neutral or stress. Four separate groups of observers in each culture (about 40 in each group) viewed the kinescopes. Two groups in Japan saw the two kinescopes of Japanese facial expressions and two other groups in Japan saw the two kinescopes of American facial expressions. The same procedure was followed in the United States. All observers were told the nature of the film-watching situation and asked to judge whether each person they saw had been watching the stress or neutral film.

Both Japanese and American observers achieved a significant but low level of accuracy in judging the facial expressions of both Japanese and American subjects. The proportion of correct judgments ranged from a low of .57 to a high of .62 (where chance would be .50); these proportions of accurate judgments for each group of observers were found by a binomial test to be significant beyond the .01 level of confidence. In looking for differences attributable to some interaction between the culture of the expresser (the person shown in the kinescope) and the culture of the observer, it is possible to make two types of comparisons. Were the observers better able to judge members of their own culture than members of the other culture? Were the American observers more accurate than the Japanese observers when judging American facial expression, and less accurate when judging Japanese facial expression? As might be expected by the limited range of accuracy scores,

reported earlier, none of these four comparisons yielded a significant difference (t tests between proportions).¹¹

Since only about 60% of the judgments by the observers in either culture were correct, the possibility remained that the observers from the two cultures were correctly judging different stimulus persons. That is, most of the correct judgments of the Japanese subjects by the Japanese observers might have been for persons who were not accurately judged by the American observers. The test of this culture-specific hypothesis was to correlate the proportion of correct responses by the Japanese and the American observers on each subject. This correlation, which is also the best statistical test of our hypothesis of universal facial expressions, was made to determine if those who were judged correctly by one culture were also judged correctly by the other culture (a positive coefficient), if those judged correctly by one culture were judged incorrectly by the other (a negative coefficient), or if there was no relationship between the cultures in their judgments (a zero-order coefficient).

The correlations were both positive and high. The correlation (Pearson product-moment) between Japanese and American observers' judgments of the United States subjects' facial expressions was .86, and between their judgments of Japanese subjects' facial expressions was .79.

These findings were completely replicated in a second experiment, with different samples of facial expressions (20 additional persons from Japan and 20 from the United States) and new groups of observers in both the United States and Japan. The proportion

11. This was tested not only by calculating the proportion of correct judgments across the entire sample of facial expressions observed, but also by calculating the proportion of correct responses to each 1-minute sample of facial expression for the Japanese observers and for the American observers. A Wilcoxin matched-pairs signed-ranks test was performed, comparing Japanese with American observers in their judgment of the Japanese neutral facial expression samples, the Japanese stress facial expressions, the American neutral facial expressions, and the American stress facial expressions. Only the last comparison was statistically significant. We have relegated this result to a footnote because this evidence of a culture difference is not consistent with the findings from seven of the eight comparisons made. Further, the correlations to be reported next offer additional strong evidence that the observers from the two cultures responded similarly to the facial expressions they judged. And in a replication to be reported below, no differences between American and Japanese observers were found.

of correct judgments was about the same, from .56 to .64; and these levels of accuracy were again statistically significant. None of the comparisons within or between cultures was significant. The correlations were positive and high. The correlation (Spearman rank order) between Japanese and American observers' judgments of the facial expressions of the United States subjects was .77, and of the Japanese subjects, .79.

Discussion. These findings provide strong evidence in support of our position that there are universal facial expressions of emotion. There was no evidence to support the contention that facial expressions are so specific to each culture that only members of that culture can accurately recognize them; quite the contrary was found. Neither the culture of the observer nor the culture of the facial expresser mattered in the accurate judgment of whether facial expressions had occurred during the stress or neutral film. Facial expressions shown by Americans must have had the same meaning to Japanese observers as they had to American observers, and the same was true for the interpretation of the facial expressions of Japanese subjects. The high correlations between the judgments of the Japanese and American observers could only occur if both groups of observers similarly interpreted the behavior they viewed. When they saw a facial response in both cultures, the observers must have interpreted it as being the type of facial behavior which would occur while watching a stress film. It is reasonable to expect that they would make that decision by a reasoning process in which they judged facial behavior as showing a particular emotion, for example, disgust, and disgust as being an emotion which would be more likely to occur during a stress than a neutral film. It is true that we have no data on how they made their judgments, and thus we cannot be certain that they made such emotion-specific inferences, but the observers were told in their instructions to expect to see unpleasant reactions of various kinds for stress film-watching, and neutral, disinterested, or mildly pleasant reactions for the neutral film-watching facial expressions.

It could well be that facial response X was interpreted as showing disgust by the Japanese and anger by the American observers; then, though they differed in their interpretation of specific emotions, they would have made the same general inference, unpleasant

emotion, and thus the same judgment, stress film-watching. This is a limitation of this experiment. It does not provide evidence that the two cultures necessarily interpret the same facial expressions as the same *specific* emotions, only that they interpret the same facial expressions as representing unpleasant and pleasant emotions, a more *global* distinction. In introducing the experiment, we pointed out this limitation in the use of spontaneous facial behavior. With most, if not all, elicitors of spontaneous expression there is no way to determine what specific emotion will occur. In our study, no accuracy criterion was available other than the gross distinction of whether the stress or neutral film was watched, and therefore we could not ask the observers to judge specific emotion in order to measure accuracy of judgment. The third set of experiments we will discuss overcomes this limitation by showing that observers across five literate cultures associate the same facial expressions with the same *specific* emotions.

There are further limitations on the conclusions that can be drawn from this study, both intrinsic to its design, which also allow the relativist to argue that this experiment does not disprove his claim that there are no universal facial expressions of emotion.¹² These problems stem from the visual contact between the cultures. The actual facial expressions might have been quite different, as would be expected if such behavior is a culture-specific, languagelike phenomenon. Japanese and Americans might simply have learned how to judge each others' facial language through visual contact across cultures. The response to this counterargument is actually to measure the facial behavior shown by the American and Japanese subjects and determine whether it is similar or different. The next experiment we will discuss accomplished just that.

Even if measurement establishes that the facial behavior shown by the Japanese and American subjects was quite similar, the relativist can advance another argument, again based on visual

12. While raising the counterarguments of the facial relativist is a heuristic device to facilitate discussion of the implications of our evidence, it is not merely that. In most instances, the arguments raised in the name of the relativist are based on actual discussions of each experiment with experts on facial expression who maintain the relativist point of view. We have not had the opportunity before to present first our theoretical framework and then the entire series of experiments, answering the counterarguments with data from all of the studies conducted.

contact between the cultures. He could argue that even if the same facial behavior did occur, it was because the facial language acquired in Japan and the United States is based on the same visual source. Perhaps people in both cultures learn their facial expressions by observing the same models on television; John Wayne's look of anger, not evolution or serviceable habits, may have established the facial configuration associated with that emotion. Similar facial behavior in cultures which share visual contact would therefore not prove the existence of universal facial expressions. While this claim seems farfetched in the light of all of the impressionistic observations about the differences in facial behavior between Japan and the United States, the objection has been seriously made by some, and it can only be decisively answered by data. The fourth series of experiments we will discuss was conducted to answer this objection, by studying peoples who were more visually isolated, with methods of investigation appropriate for working within preliterate cultures.

The Measurement of Spontaneous Facial Expressions in Two Literate Cultures

This experiment, like the first, was designed to determine whether facial expressions of emotion shown by members of two different cultures in a particular eliciting circumstance are the same or different. However, rather than a judgment approach, a components approach was used. The facial behavior of the Japanese and American subjects was measured directly to eliminate the possibility that the high correlations found in the first experiment were achieved because observers could interpret culturally differing facial behavior correctly, and to establish that the facial behavior (and not only the judgments) was similar across cultures. We hypothesized that the repertoire of specific facial expressions of emotion shown during the stress film would be similar between the Japanese and American subjects, and less so during the neutral film. Lazarus's prior research showed that the stress film aroused emotion and that the neutral film did not. Our predictions pertained to emotional expressions in the face, and these could be expected when the subjects watched the stress film. There would be less likelihood of any emotional reactions to the neutral film, the only

possibilities being anticipations of seeing the stress film or mild happiness about the content of the neutral film. The lack of any strong emotion-arousing properties in the neutral film would increase the likelihood of idiosyncratic responses within each culture and thus reduce the chances of similarities between cultures.

In introducing the first experiment, we mentioned the potential problems which could prevent our obtaining similar facial behavior. We shall briefly review these now, because some of the sources of potential difficulty are not relevant to the use of a measurement approach but pertain only to judgment studies, and some are obviated by the positive results of the first study. We need no longer worry about whether the observers in either or both cultures might not know how to interpret facial behavior, or whether either set of observers might apply some stereotype which would cause them to interpret facial behavior differently when shown by members of their own or another culture. Nor need we worry about whether the elicitor, the stress film, aroused any distinguishable facial behavior, for if it had not, the observers would not have been able to make significantly accurate judgments and the high correlations would not have been possible. But three potential sources of difficulty remain, two of which were problematic for the first study also, and one of which is new.

1. The stress film may have elicited different emotions in the two cultures; perhaps seeing someone undergo surgery arouses negative emotions, but different negative emotions for Japanese than for American subjects. In that case, the positive findings from the judgment study would not be supported by the measurement study, which instead would indicate that the Japanese and American subjects showed different facial behavior.

2. Even if the stress film elicited the same emotion(s) in the two cultures, differences in facial behavior could occur because of differences between cultures in display rules. The judgment study could have succeeded even with some differences in display rules, but not the measurement study. For example, if the Japanese utilized the management technique of masking and the Americans did not, observers might have detected, at least in some subjects, that negative emotion was present, though masked. The measure-

ment study would reflect these differences between the cultures in facial behavior.

3. The last potential problem, unique to the use of a measurement procedure, is that the measurements themselves might not score the relevant units of facial behavior.

If we failed to support our hypothesis, if the facial behavior shown by the American and Japanese subjects was different, we would have these bases or excuses for arguing with the relativist as to whether our results support his viewpoint. However, the measurements themselves were expected to provide data relevant to whether or not different emotions were elicited and whether display rules were operable. If we proved our hypothesis by finding similarity in the facial behavior, we would succeed in forcing the relativist to modify, if not abandon, his claim. He would have to admit that the same facial "language" is employed, and while he might argue about the origin of that similar facial behavior, other data from other experiments with less visually contaminated subjects could resolve the issue. The relativist would have to acknowledge that we have shown comparable facial behavior, but he might argue about how we can be certain that our measurements actually differentiate among specific emotions. We will introduce evidence on this point and also later present another set of experiments to confirm our evidence on that point.

The sample of facial behavior of the Japanese and American subjects was larger than that shown to the observers in the previous experiments. It consisted of the last 3 minutes of each subject's facial behavior (rather than 1 minute) videotaped during the neutral film, and the entire 3 minutes recorded during the last stress film. Measurement utilized a new procedure developed by Ekman, Friesen, and Tomkins, the Facial Affect Scoring Technique (FAST). We can here provide only a brief description of this scoring procedure. Details about its derivation, use, and reliability are reported elsewhere (Ekman, Friesen, and Tomkins, 1971).

There are two separate steps in FAST measurement, location and classification. In location, scorers determine the beginning and end (and thereby the duration) of each observable movement of the face. In classification, each of these located facial events is compared

with a list of items and assigned the score which represents the item it most closely resembles. Location and classification are done separately for the brows-forehead, the eyes-lids, and the lower face. When one of these facial areas is scored, the other two areas are blocked from the view of the FAST scorer. Location requires slowed- and stop-motion viewing. Classification requires consulting a list of facial items for each of the three facial areas. There are 8 items for the brows-forehead, 17 for the eyes-lids, and 59 for the lower face. Each item represents a distinctive appearance of the face. The items do not include or mention emotion, but instead describe a behavioral appearance, for example, a lip press. Most of the items are depicted visually by photographic examples; a few of the items for the lower face are instead described in words. Figure 2 shows the photographic definitions of the FAST brow-forehead items for surprise, fear, and anger.

Most of the items were based on theory, although some were empirically derived. Ekman, Friesen, and Tomkins constructed their scoring system on a priori grounds, including as facial items only behavior which they thought would distinguish among six primary emotions.

Chart 1 describes the general appearance which characterizes each of these six primary emotions, giving only enough detail to convey to the reader what we mean by a distinctive facial appearance.

These descriptions of the distinctive appearance of these emotions are of necessity oversimplified, sketching only the most obvious characteristics of the prototypical facial expression of each emotion. FAST measurement uses a more elaborate description, too lengthy and too awkward to present in words here. FAST items for each emotion include not only these elaborations but also items for measuring differences in intensity and variations associated with physiognomy. The eyes-lids and the lower face are represented by more than one item for each emotion; e.g., there are three mouth and two eye items for fear. The brows-forehead is represented by only one item for each emotion except sadness, for which there are four.

In devising FAST no attempt was made to include all facial behavior, but only that which was thought to distinguish among specific emotions. For the brows-forehead and the eyes-lids, the set

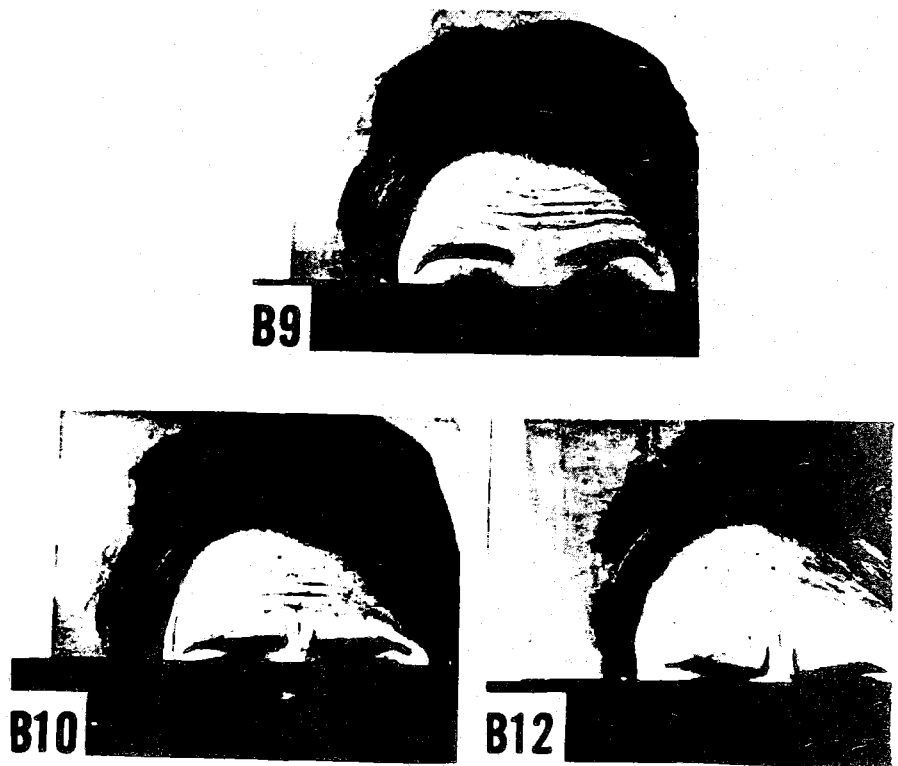


FIG. 2. Examples of the Facial Affect Scoring Technique (FAST) scoring definitions: the brows-forehead items for surprise (B9), fear (B10), and anger (B12). Copyright © 1972 by Paul Ekman.

CHART 1
APPEARANCE OF THE FACE FOR SIX EMOTIONS

	Brows-Forehead	Eyes-Lids	Lower Face
Surprise	Raised curved eyebrows; long horizontal forehead wrinkles	Wide opened eyes with sclera showing above and often below the iris; signs of skin stretched above the eyelids and to a lesser extent below	Dropped-open mouth; no stretch or tension in the corners of the lips, but lips parted; opening of the mouth may vary
Fear	Raised and drawn together brows; flattened raised appearance rather than curved; short horizontal and/or short vertical forehead wrinkles	Eyes opened, tension apparent in lower lids, which are raised more than in surprise; sclera may show above but not below iris; hard stare quality	Mouth corners drawn back, but not up or down; lips stretched; mouth may or may not be open
Anger	Brows pulled down and inward, appear to thrust forward; strong vertical, sometimes curved forehead wrinkles centered above the eyes	No sclera shows in eyes; upper lids appear lowered, tense and squared; lower lids also tensed and raised, may produce an arched appearance under eye; lid tightening may be sufficient to appear squinting	Either the lips tightly pressed together or an open, squared mouth with lips raised and/or forward; teeth may or may not show
Disgust	Brows drawn down but not together; short vertical creases may be shown in forehead and nose; horizontal and/or vertical wrinkles on bridge of nose and sides of upper nose	Lower eyelids pushed up and raised, but not tensed	Deep nasolabial fold and raising of cheeks; mouth either open with upper lip raised and lower lip forward and/or out, or closed with upper lip pushed up by raised lower lip; tongue may be visible forward in mouth near the lips, or closed with outer corners pulled slightly down

CHART 1 (Continued)

	Brows-Forehead	Eyes-Lids	Lower Face
Sadness	Brows drawn together with inner corners raised and outer corners lowered or level, or brows drawn down in the middle and slightly raised at inner corners; forehead shows small horizontal or lateral curved and short vertical wrinkles in center area, or shows bulge of muscular contraction above center of brow area	Eyes either glazed, with drooping upper lids and lax lower lids, or upper lids are tense and pulled up at inner corner, down at outer corner with or without lower lids tensed; eyes may be looking downward or eyes may show tears	Mouth either open with partially stretched, trembling lips, or closed with outer corners pulled slightly down
Happiness	No distinctive brow-forehead appearance	Eyes may be relaxed or neutral in appearance, or lower lids may be pushed up by lower face action, bagging the lower lids and causing eyes to be narrowed; with the latter, crow feet apparent, reaching from outer corner of eyes toward the hairline	Outer corners of lips raised, usually also drawn back; may or may not have pronounced nasolabial fold; may or may not have opening of lips and appearance of teeth

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of theory-based items almost completely exhausts the anatomically possible facial appearances. For the lower face, a number of facial appearances were excluded from the list of FAST items because they were not considered to be distinctive for a particular emotion (e.g., lip bite). Since we intended in this experiment to measure all facial behavior, not just facial behavior which theoretically is relevant to emotion, we expanded the list for the lower face by empirically deriving additional items for any facial appearance which was found to occur frequently in these videotape records. There were 15 of these non-FAST items in addition to the 44 FAST

items utilized in scoring the lower face. Location and classification of all facial movements which could be reliably observed was separately performed for each of the three facial areas. Three scorers independently located and classified all observable movements in each area of the face. Approximately 3 hours of scoring time were required for each minute of facial behavior; the largest fraction of this time was consumed in obtaining exact locations of events.

The most direct way to test our hypothesis was to correlate the facial measurements of the American and Japanese subjects to determine whether their facial behavior was similar during the stress film. Table 1 reports a number of different correlations (Spearman rank order). All of the correlations reported in Table 1 are based on frequency rather than duration measures; the number of times a given type of facial behavior occurred across the 25 subjects in each culture was the measure employed rather than the duration for a given type of facial behavior. Correlations were separately calculated with the duration measures, and the findings were the same as those reported in Table 1.

Results are given for facial behavior in the neutral and stress conditions for each of the three separate facial areas. Within each of these conditions the correlations were calculated on the measurements both of items and of emotions. The item correlations were based on the actual scoring items utilized in the classification of facial behavior. The emotion correlations were based on combining particular items which our theory specified as variants of the same emotion. Let us take as an example the item and emotion correla-

TABLE 1
RANK ORDER CORRELATIONS BETWEEN JAPANESE AND
AMERICAN SUBJECTS OF FACIAL BEHAVIOR FREQUENCY
MEASUREMENTS

	Neutral		Stress	
	Item	Emotion	Item	Emotion
Brows-Forehead	.69 ^a	.97 ^b	.92 ^b	.86 ^a
Eyes-Lids	.39	.86 ^a	.72 ^b	.95 ^a
Lower Face	.68 ^b	.75 ^a	.78 ^b	.96 ^b

^a $p < .05$

^b $p < .01$

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tions for the eyes-lids. There were 17 eyes-lids items. The frequency of occurrence of each of these 17 items across all Japanese subjects was correlated with that for the American subjects, separately for the neutral and stress conditions. When the correlation was calculated for emotions, the 2 eyes-lids items which our theory specifies are variants of anger were combined to yield a single anger frequency, the 3 items for happiness were combined to yield a single frequency for happiness, etc. Thus, combined item frequency scores for each emotion were obtained, and these emotion frequencies were correlated. Items, then, describe actual behavior, all of the observable facial behavior. Emotions are groups of items categorized in accordance with our theory.

With one exception, the emotion correlations are higher than the item correlations. This is because differences between cultures on specific items were eliminated or reduced when the items were grouped according to emotion. The largest such difference was in the eyes-lids-area correlations during the neutral condition. The Japanese and American subjects differed in the frequency of occurrence of those eyes-lids items which by our theory are variants on sadness. When the items were grouped into emotions, this difference in frequency was eliminated and the correlation increased from .39 on an item level to .86.

Except for this instance, the correlations on facial behavior in the three separate areas of the face for both items and emotions were high. As we had expected (and explained in introducing this experiment), these correlations were higher for the facial behavior during the stress than the neutral condition, but even for the latter the correlations were substantial.

Let us now turn from the measurement of separate facial areas to consideration of behavior where the whole face was involved. Whole faces were defined as those actions when two or three areas of the face were simultaneously in movement. When we considered these whole-face incidents on an item level, examining the particular combinations of facial items from different areas of the face, the results were idiosyncratic. In the neutral condition there were no whole-face item combinations which occurred more than twice; in the stress condition there were few (less than 5%) whole-face item combinations which were shown by more than two persons in

either culture. When items were grouped into the emotion categories, however, clear results emerged for the whole faces.

The items for each area of the face were converted into emotion scores and these emotion scores were summed for a particular whole-face incident in order to classify it as either a single-emotion facial expression or a blend expression. It was classified *single emotion* if one emotion predominated in the scores for the whole face, and *blend* if two emotions had similar scores. (The formulae employed for distinguishing single from blend whole-face expressions are reported in Ekman, Friesen, and Tomkins, 1971). As had been expected, and as found for the separate areas of the face, the whole-face, single-emotion correlations were higher for the stress condition (.88) than for the neutral condition (.59). The latter correlation was not significant, the former reached the 1% level of confidence.

It was not possible to calculate a correlation coefficient for the whole-face blends in the neutral condition since there were very few blend facial expressions (five in each culture). The correlation for blend faces in the stress condition was, as predicted, quite low (.25).

When we consider the results in terms of emotion rather than of behavioral description (items), we have considerably more confidence in the whole-face data than the partial-face data. It is probably safer to say an emotional expression occurred on the face if more than one area was involved; it is less likely that the movement was a twitch or an event unrelated to emotion, and particularly if the movements, when separately and independently measured, were classified in terms of items which represent the same emotion. Table 2 reports the frequency of occurrence of whole-face, single-emotion expressions for both cultures and both conditions. (These are the figures which were utilized for calculating the whole-face, single-emotion correlations of .59 and .88.)

Table 2 shows the similarity in the relative frequency of particular emotional expressions in the two cultures; the correlations show the similarity was quite pronounced in the stress condition, and less so in the neutral condition. Table 2 provides information concerning which emotions occurred most frequently for each culture in each condition, and the opportunity to examine whether the change in emotional expressions from neutral to stress was the

TABLE 2
FREQUENCY OF TYPE OF EMOTIONAL BEHAVIOR
SHOWN IN WHOLE FACES

	Nonstress		Stress	
	U.S.	Japan	U.S.	Japan
Anger	18	5	29	28
Disgust	2	2	61	48
Fear	0	3	2	1
Happiness	7	0	8	14
Sadness	12	14	59	126
Surprise	22	6	76	50
Blends	4	5	37	52
Unclassifiable	5	5	29	24
Total Whole-face Events	70	40	301	343

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same in both cultures. There was a marked increase in the total number of facial expressions shown in the stress as compared to the neutral condition *in both cultures*. This was not simply an increase in all facial expressions, but the shift in activity was related to the specific emotion involved. There was little change in the absolute number of fear expressions or happiness expressions; the largest increase was in the number of disgust expressions *in both cultures*. This is true even if the shift in total number of facial expressions is removed by converting the entries in Table 2 into percentages of the total activity shown by a culture in a condition. The largest increase from neutral to stress was in disgust faces *in both cultures*. Figure 3 shows some video frames of whole-face behavior of both Japanese and American subjects which was measured by FAST as disgust.

The last comparison between cultures also utilized the data on single-emotion, whole-face expressions. Here, the type of expressions shown by each *person* within each culture was considered. The correlations in Table 2 do not indicate whether, for example, in Japan the subjects who showed disgust also showed sadness, while in the United States those who showed disgust never showed sadness. When tallies for each emotion are made across all subjects (as in Tables 1 and 2) within a culture, such a possibility is obscured.

We assigned subjects to one of six categories on the basis of the



FIG. 3. Video frames of facial behavior scored by FAST as showing disgust; a Japanese subject on the left and a U.S. subject on the right. Copyright © 1972 by Paul Ekman.

different whole-face expressions shown during stress. One category was for those who showed no facial expressions of emotion. Another was for those who showed only happiness, and another for those who showed only surprise. The next three categories were based on interview material that we have been gathering on other subjects in the United States, examining their reactions to stress films which show surgical scenes of a person suffering. The interviews suggest three major emotional reactions to witnessing such stressful material: an empathetic reaction in which the person feels sadness or fear, both signs of concern for the sufferer; a disgust response, which we interpret as a lack of empathy and the product of viewing the sufferer as an object, or anger, reflecting irritation with having to see the material; and some alternation between the two. On the basis of these impressions we established three more categories: (a) disgust and/or anger but neither sadness nor fear; (b) sadness and/or fear but neither disgust nor anger; and (c) both sadness and/or fear, and disgust and/or anger. Table 3 shows the number of subjects in each culture who showed each of these six emotional reactions during the stress condition. Clearly the stress film did not elicit

TABLE 3
NUMBER OF SUBJECTS WITHIN EACH CULTURE WHO SHOWED
PARTICULAR TYPES OF FACIAL EXPRESSION OF EMOTION IN
THE STRESS CONDITION BASED ON WHOLE-FACE SINGLE-
EMOTION DATA

	Japan	U.S.
No Whole-face Emotion Expressions	5	6
Happiness Only	2	1
Surprise Only	2	0
Disgust and/or Anger but neither Sadness nor Fear	3	4
Sadness and/or Fear but neither Disgust nor Anger	3	5
Sadness and/or Fear plus Disgust and/or Anger	10	9
Rank Order Correlation = .97		

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just one type of emotional reaction, but the crucial point for our purposes here is that the same types of facial expressions of emotion were shown by about the same number of people in both cultures. The correlation between cultures calculated on these figures is extraordinarily high (.97).

Discussion. This experiment, like the first, provides strong evidence in support of our contention that there are universal facial expressions of emotion. Both experiments dealt with the same records of facial expression in the same eliciting circumstance, but different research methods were applied to address related but different questions about universal facial expressions of emotion. The first experiment disproved the notion that facial expressions are culture-specific in the sense that members of each culture can only accurately recognize the reactions of members of their own culture. Instead, the first experiment showed that the facial expressions of Japanese and Americans have a similar meaning to Japanese and American observers. But that experiment studied only the judgment of facial expression and could not tell us if the actual facial expressions shown by the Japanese and American subjects were similar. This experiment has answered that question. We have found great similarity in the facial expressions shown during the stress films in both these cultures. Whether measurements of separate facial areas or of combined activity of the total face were considered, and whether the measurements were considered on the level of specific behavioral description or integrated into emotion categories on the basis of theory, the results were the same: strikingly similar facial responses in the two cultures.

The question might be raised as to whether we have actually shown that the emotional expressions were the same in the two cultures, or only that the facial behavior was the same. How do we know that the behavior we called fear, for example, is not actually behavior unrelated to emotion, or behavior relevant to anger? Before answering this question, it is important to emphasize that even if we had only measurements which could be interpreted on the level of behavioral descriptions of the face, we have in this experiment supported our theoretical formulation of universals in facial expressions of emotion. We have shown that in a situation described by subjects as calling forth emotion, the same facial

behaviors occurred in these two quite different cultures. But let us turn to the question of whether we have been able to show that specific emotions were compared, or whether the behavioral similarities we have found were again evidence only of a comparable *global* negative emotional state.

We have no direct evidence to show that the items we call fear correlate with either a subject's immediate self-report, or with the elicitation of that one emotion. (We are in the process of obtaining such validation data.) But we do have data which show that the emotion represented by each FAST item does correspond with independent judgments of emotional expressions. We utilized our scoring system to measure still photographs of the face, and converted the item measurements into our emotion categories. The FAST emotion scores correctly predicted the emotion term assigned by untrained observers to these photographs in 88% of the cases (Ekman, Friesen, & Tomkins, 1971). What FAST measures as emotion is at least valid in accounting for how people respond to facial expression when they interpret how someone feels.

While we believe this is convincing evidence in support of our claim that FAST measures specific emotions, we wanted further evidence to support our claim that there are facial expressions which are universal for specific emotions. The next experiment was designed to accomplish just that, with a very different procedure which allowed clear specification of particular emotions.

*The Recognition of Facial Expressions of Emotion in Five Literate Cultures*¹³

The main ambiguity in the results from the first two experiments was whether the evidence of universality was for *specific* emotional expressions or more *global* states. In the first experiment the observers' judgments of facial expression were global distinctions between negative and positive or neutral affect and no conclusion could be drawn as to whether specific facial expressions were interpreted as showing the same specific emotions in both of the cultures studied.

13. Dr. Carlos Sluzki, Centro de Investigaciones Psiquiatricas, Lanus Province of Buenos Aires, collected the data on the Argentinian and Chilean observers; we collected the data on the Brazilian and Japanese subjects with the aid of Professor Robert Berryman of the National University of Brazil and Professor Tomita of Waseda University, Japan.

In the second study it could be argued that the Facial Affect Scoring Technique is an a priori system which has not yet completely established that it validly measures specific emotions. We could only be certain that the same specific facial behaviors were shown in both cultures, not necessarily the same specific *emotional* expressions.

The purpose of this next experiment was to prove that the universality of facial expressions of emotion extends to specific emotions. This experiment was designed to show that across literate cultures people recognize the same facial expressions for happiness, anger, sadness, fear, disgust, and surprise. The relativist, of course, would expect negative results.

The most crucial aspect of the design of this experiment is how the sample of faces to be shown to observers across cultures was selected. The typical procedures utilized by other investigators were not appropriate for our purposes. Sampling pictures on the basis of the actor's intended pose (i.e., Triandis & Lambert, 1958), or showing poses which had elicited high agreement within one culture to members of another culture (i.e., Izard, 1968) would be vulnerable to the inclusion of facial expressions which were culture-specific. If an actor tried to pose fear, he might not show the presumed universal fear expression, but a reaction to trying to pose the emotion which might be recognized by members of his own culture as a fear attempt. If the reaction were culture-specific, then the recognition that he is "looking afraid" might also be culture-specific.

Another problem is that the actor when trying to pose fear might also by accident or habit show components of surprise, and the resulting face might be a fear-surprise blend. In one culture a fear-surprise face might be judged as showing fear; but in another culture the surprise element might be more salient, or the combination simply confusing.

If we were to keep emotion-related, but nonemotional, facial responses out of the set of faces to be shown across cultures, and if only faces showing a single emotion were to be included, then we could not trust either the intent of a poser or the agreement reached by observers within any one culture as the basis for selection. We needed some other means for deciding whether a face showed emotion at all, and if it showed one emotion only.

We selected faces on the basis of descriptions of the facial configurations which distinguish among emotions, concurrently being developed by Ekman, Friesen, and Tomkins for their Facial Affect Scoring Technique. The scoring procedure itself was not complete at the time, so selection could not be based on precise scoring techniques. Instead we used the cruder procedure of examining the descriptive lists of distinctive facial features while we inspected over 3,000 pictures of facial expressions, both posed (Engen, Levy, & Schlosberg, 1957; Frois-Wittmann, 1930; Tomkins & McCarter, 1964) and spontaneous (Ekman & Friesen, 1968).

Selection, then, was done by applying to each face a *theoretically* based set of criteria, which specified the presumed appearance of each emotion. No consideration was given to poser's intent or observer's judgment of emotion. An attempt was made to include faces which varied in intensity. This seemed possible for happiness, anger, and sadness, but there was little apparent variation in the intensity of the other emotions shown in the pool of photographs.

Thirty photographs met the criteria for showing a single particular emotion. These included faces of both male and female Caucasians, adults and children, with most expressions posed and a few spontaneous. Figure 4 shows some of these photographs.¹⁴

The pictures were shown one at a time (usually for 10 seconds each) to observers in five cultures. The observers were asked to choose from among six emotion categories the one which best described each photograph. Each category was defined by a single word in the language of the culture, except the disgust category, which contained both the word for *disgust* and the word for *contempt*. The observers were also asked to judge the intensity of the emotion on a 7-point scale.

The primary question is whether or not the same emotion was judged for the same faces by observers from the five cultures; and the secondary question is whether judgments of intensity varied with culture. Let us consider first the primary question. Table 4 lists as percentages the most frequent (modal) judgment for each of the 30

14. We selected some of Tomkins's photographs for this figure since all of the other photographs except those of Ekman and Friesen have already been published. The Ekman and Friesen photographs could not be published since they were of mental patients.



FIG. 4. Photographs from Tomkins's series utilized in cross-cultural research; observer norms on these faces reported in Table 4. Copyright © 1972 by Paul Ekman.

TABLE 4
JUDGMENTS OF EMOTION IN FIVE LITERATE CULTURES

Emotion Represented	Investigator Who Originally Obtained the Face Photograph	Identification Number of the Face	U.S. (N = 99)	Brazil (N = 40)	Chile (N = 119)	Argentina (N = 168)	Japan (N = 29)	
Happiness	Ekman	26F8	100	97	93	96	97	
	Ekman	26F2	92	90	76	78	44 disgust 41 happy	
	Schlosberg	LF32	97	85	88	96	83	
	Schlosberg	LF14	96	87	84	93	83	
	Tomkins	F55	100	92	94	96	100	
	Tomkins	E15	99	92	97	97	100	
	Tomkins	HE32	97	95	95	98	100	
	Tomkins	I18	96	95	95	98	90	
	Fear	Schlosberg	LF6	91	87	88	82	76
		Tomkins	F50	85	67	68	54	66
Disgust	Frois-Wittmann	15	58	72	66	59	83	
	Frois-Wittmann	51	75	80	91	78	83	
	Tomkins	HE4	93	90	95	92	69	
	Tomkins	I57	89	95	90	87	97	
	Tomkins	D10	94	82	76	68	69	
	Tomkins	H53	92	97	92	92	90	

Anger	Frois-Wittmann	FW39	64	90	87	75	45
	Frois-Wittmann	FW36	95	97	75	81	90
	Tomkins	H2	49	52	62	47	48 disgust 31 anger
Surprise	Tomkins	CI18	67	90	94	90	90
	Schlosberg	LF11	67	82	62	65	59
	Frois-Wittmann	27	95	87	93	95	100
Sadness	Tomkins	E34	90	77	83	89	76
	Tomkins	H16	88	80	89	95	86
	Ekman	4A2	97	87	94	84	97
	Ekman	5A15	74	82	88	79	83
	Ekman	19A1	77	67	84	88	69
	Ekman	19A5	93	88	92	95	97
	Schlosberg	LF20	87	87	94	86	45
	Schlosberg	LF49	90	95	94	96	93
	Tomkins	J38	84	59	88	78	62
	Tomkins	H47	93	88	93	95	97

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faces for each of the five cultures. When the modal judgment for a face was not the emotion term which we had expected on the basis of our selection procedures, both the expected and obtained percentages are listed.

The relativist prediction would be that the 30 faces will yield different emotion judgments across the five cultures. Simply reading the entries in the table shows this did not happen. An analysis of variance utilizing the entries in Table 4 was performed to test the relativists' hypothesis that there is a difference between cultures and/or an interaction between culture and emotion judged. Neither was significant. Another contention of the relativist might be that even though the most typical (first mode) emotional meaning of the faces did not differ across the five cultures, the next most typical judgment (second mode) might. Another analysis of variance was performed utilizing the second modes rather than the first modes. Again there was no significant effect for culture nor any interaction between culture and emotion judged. For almost all of the faces, the second mode was the same across the five cultures. Since there has been some theoretical interest (Boucher & Ekman, 1965; Schlosberg, 1954) in second-mode responses as a basis for establishing relationships between emotions, we have listed those results in Table 5.

Our hypothesis, of course, was that a particular facial expression would be judged as showing the same emotion regardless of culture. Table 4 shows that this occurred for 28 of the 30 pictures; for one

TABLE 5
THE SECOND MOST FREQUENT EMOTION JUDGED FOR EACH EXPRESSION
ACROSS ALL FIVE LITERATE CULTURES

When the majority of the observers judged this emotion:	The minority of the observers judged this emotion:
Surprise.....	Fear
Fear.....	Surprise
Disgust.....	Sadness
Sadness.....	Disgust
Anger.....	Disgust
Happiness.....	Sadness: Argentina & Chile
	Disgust: U.S.A., Japan, & Brazil

TABLE 6
KAPPA COEFFICIENTS ON THE JUDGMENTS OF EMOTION FROM
FIVE LITERATE CULTURES

U.S.	.82
Brazil	.81
Chile	.80
Argentina	.82
Japan	.73

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happy face and one anger face the Japanese observers differed from the other four cultures in their judgment. Chi-squares were calculated for each entry in Table 4; all but these same two were significant ($p < .01$), showing not only that the modes were the same across the cultures but that they represented a significant level of agreement within each culture. A Kappa correlation was also calculated to test our hypothesis. Within each culture the judgments obtained were compared with those expected for each set (emotion category) of photographs. The correlations, shown in Table 6, were all significant ($p < .01$), and show that within each culture the faces were judged as we had expected.

The second question asked in this experiment is whether the intensity judgments varied with the culture of the observers. The relativist would expect such differences, and our theory might suggest them also. Display rule differences between cultures *could* be such that in one culture there is typically a more overt level of emotional expression than in another, perhaps across all emotions. If so, then when observers from different cultures looked at the same expression, they might differ in their judgment of its intensity. For example, if we believe the folklore about Latin cultures, we might expect that what United States observers will judge as intense anger would be judged as only moderate anger by Brazilians or Argentinians, etc. This expectation depends upon the folklore being true and applicable to most or all emotions, and upon our showing a sufficient sampling of intensity variations. The statistical tests failed to show any difference in intensity. An analysis of variance on the mean intensity scores for the 30 photographs showed no main effect for culture and no interaction between culture and emotion judged. Further, the correlations between cultures in intensity

TABLE 7
CORRELATIONS BETWEEN MEAN INTENSITY AND
BETWEEN STANDARD DEVIATIONS ON INTENSITY JUDGMENTS

	U.S.A.	Brazil	Chile	Argentina
U.S.A.	—	78	72	82
Brazil	96	—	68	83
Chile	93	95	—	77
Argentina	96	97	97	—

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judgments were extraordinarily high. Table 7 shows two sets of correlations (Pearson product-moment), the bottom set based on the mean intensity score for each face within each culture, and the top set based on the standard deviation intensity score for each face within each culture. These correlations show that the facial expressions of emotions we have studied had the same intensity value across the five literate cultures.

Discussion. These results provide very strong evidence that facial expressions are universally associated with the same specific emotions. With two exceptions, the same facial expressions were interpreted as showing happiness, fear, disgust, anger, surprise, and sadness, regardless of the language or culture of the observer. Comparable results were also obtained by Izard (1971) with his own set of facial expressions and observers from seven cultures.

For these results to be obtained, the observers in each culture must have been already familiar with these facial expressions. They must have had experiences which would cause them to associate each facial expression with a particular emotion. Furthermore, those experiences must have been quite similar across these cultures, or how can we explain that what is judged fear in one culture is not judged anger in another?

Our explanation, of course, rests on our postulated facial affect program. It is this neurally based affect program linking particular facial muscular movements with particular emotions which is responsible for the associations in all cultures between these particular facial expressions and emotions. Even though the specific elicitor for an emotion can and often will vary from culture to culture, when an emotion is aroused the same set of facial muscular

movements will be fired by the affect program. It is the affect program, then, which acquaints observers in all cultures with this particular set of facial expressions; it is because of this program that observers relate these distinctive facial expressions to particular contexts described by one or another emotion term. Unfortunately there is one loophole which could be used to totally discount the evidence from this experiment and from the first two as well—visual contact among the cultures.

The relativist could argue (and has) that these findings do not prove the existence of universal facial expressions of emotion, or of any facial affect program. They only show that in cultures which have an important shared visual source (television, motion picture films, magazines, etc.), people can and do learn their facial expressions from the same mass media models, and will therefore have learned the same facial expressions. To close this loophole, we undertook an extensive study of two groups of people who have had little or no exposure to the mass media, to Caucasians, or to each other. Let us turn now to that final and crucial experiment.

*The Recognition and Expression of Emotion in Two Pre-literate Cultures*¹⁵

The purpose of this experiment was to establish that the same facial expressions are associated with the same emotions in pre-literate as in literate cultures. Our intent was to minimize the possibility of contamination from a common visual source. Because the subjects in the first three experiments shared exposure to the same mass media models and to members of each others' cultures, they could conceivably have learned to recognize each others' facial expressions; or perhaps they all learned their facial expressions from imitating the same mass media models. By studying subjects from remote, visually isolated, pre-literate cultures, we hoped to

15. The study of the Fore which is reported here developed out of a previous study of these people in which Richard Sorenson was a coinvestigator (Ekman, Sorenson, & Friesen, 1969). We are grateful to Sorenson and to Neville Hoffman (University of Western Australia) for their help in gathering and interpreting the data reported here. Part of the Fore data has been reported on (Ekman & Friesen, 1971). The study of the Dani was pursued in cooperation with Eleanor and Karl Heider (Brown University). Ekman, Friesen, and E. Heider planned the design of that study; the Heiders collected the data, made some design decisions, and shared in the data analysis.

substantiate our earlier findings and thereby our theory that commonalities in facial expression are not an artifact of visual contact across certain cultures, but are truly universal due to the operation of a facial affect program.

Two different experiments were performed in two very different preliterate cultures in New Guinea. In the first experiment the recognition of emotion was studied, and in the second experiment the expression of emotion was studied. We will briefly describe the two cultures and then each experiment.

The first culture studied, in 1967/68, was the Fore linguistic-cultural group of the South East Highlands of New Guinea. Until 12 years ago this was an isolated, Neolithic, material culture (Gajdusek, 1963; Sorenson & Gajdusek, 1966). By the time our research began, many of these people had had extensive contact with missionaries, government workers, traders, and United States scientists; some, however, had not. We were most interested in the latter persons, and adopted the following selection criteria for participation in our research: they had seen no movies, neither spoke nor understood English or Pidgin, had not lived in any of the Western settlement or government towns, and had never worked for a Caucasian. These criteria made it unlikely that subjects would have so completely learned some foreign set of facial expressions of emotion that their judgments and expressions of emotion would be no different from those of members of literate cultures.

The second culture studied, in 1970, was the Grand Valley Dani, who live in the Central Highlands of New Guinea and speak a Papuan language which perhaps is remotely related to the language of the Fore (Heider, 1970). They live some 500 miles to the west of the Fore, in West Irian, the Indonesian half of New Guinea. Only during the 1960s did they give up intertribal warfare and stone axes. Although all of the individuals tested had seen a few Caucasians, these contacts were casual and incidental to their own way of life. They are most remarkable for their isolation and continued disinterest in European and Indonesian influences. The adolescents studied were attending school, but none had had Caucasians as teachers.

A different judgment procedure was required for working with people who did not read or write, because of the problem of appro-

priately describing emotion concepts in their languages. Instead of showing one facial expression at a time and asking the observer to choose a word from a list of emotion terms, as in the literate cultures, two or three faces were shown simultaneously, an emotion story was told, and the subjects were requested to point to the face which showed the emotion described in the story. (This procedure was first used by Dashiell, 1927, with young children.) Simple stories were developed within each culture to be relevant to that culture and to connote only one emotion, not a blend (details about the judgment procedure and the stories are described in Ekman & Friesen, 1971; and in Ekman, Heider, Friesen, & Heider, in preparation).

Forty photographs of 24 different persons were used in the Fore experiment, and 53 photographs of 26 different persons were used in the Dani. These photographs had been scored with the Facial Affect Scoring Technique as showing one specific emotion. Furthermore, judgment studies had found that these faces conveyed a single specific emotion to observers within at least one literate culture.

Three photographs were shown with each story to male and female adults in the Fore ($N = 189$); two photographs were shown with each story to male and female children in the Fore ($N = 130$), and to male adults ($N = 10$), male and female children ($N = 20$), and male adolescents ($N = 34$) in the Dani. To facilitate comparisons between the two cultures, we have reported in Table 8 only data derived from subjects to which two faces had been shown in the judgment task: the Fore children and the largest group of Dani, the adolescents. These results well represent the findings for the other age groups in each culture.

Each row in Table 8 is organized to show how often the observers in these preliterate cultures chose the same facial expression for a particular emotion as had members of literate cultures. For example, in the first row the figure of 92% for the Fore signifies that when the Fore were read a happiness story ("His friends have come and he is happy") and were shown a facial expression judged as happy by persons in literate cultures, and either a surprise, anger, sadness, or disgust face (as judged by literate-culture observers), 92% of their choices were of the happiness face.

TABLE 8
 PERCENT OF THE JUDGMENTS BY MEMBERS OF TWO PRELITERATE
 CULTURES WHERE THE FACIAL EXPRESSION OF EMOTION AGREES
 WITH LITERATE CULTURE RESULTS

Emotion Described In the Story	Fore 130 Observers	Dani 34 Observers	Discriminated from:
Happiness	92	98	Surprise, Anger, Sadness, Disgust
Sadness	81	77	Anger, Fear, Disgust Dani Only: Surprise Fore Only: Happiness
Disgust	85	91	Sadness Dani Only: Happiness, Surprise, Anger
Surprise	98	89	Happiness, Fear, Disgust
Fear	88 92 100 —	80 81 — 56	Anger Sadness Disgust Surprise
Anger	— 90 — —	94 61 76 48*	Happiness Sadness Fear Disgust

* Not significant; all other figures $p < .01$.
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The results are very clear for both the Fore and the Dani, on happiness, sadness, disgust, and surprise. We have reported the fear and anger results in more detail because not all of these emotion discriminations were as clear. When the fear stories were read, the fear face was chosen over the anger, sadness, and disgust faces. While fear was also chosen over the surprise face by the Dani adolescents, and at a significant level, the percentage was low. The discrimination of fear from surprise was low but statistically significant in the other two Dani age groups also (59% for the adults, 63% for the young children). Unfortunately, through an oversight the fear from surprise discrimination was not tried with the Fore children; but the Fore adults were unable to make this discrimination; fear was chosen in only 43% of the trials.

When the anger stories were read, angry facial expressions were

chosen instead of happy, sad, and fearful ones; but anger was not chosen more often than disgust by the Dani adolescents. The failure to choose the anger face rather than the disgust face when the anger stories were read was also evident with the adults (41%) and the young children (33%) in the Dani. This choice was not given to the Fore children, but when the Fore adults were read the anger stories they chose the angry expression (87%) rather than disgust.

The judgment studies with the Fore and the Dani provide very strong evidence of universal facial expressions. All but one of the discriminations of facial expressions of emotion made in literate cultures were also made in both of these preliterate cultures. We are presently investigating whether the failure of the Fore to discriminate fear from surprise, and of the Dani to discriminate anger from disgust, represents some facet of their culture or is instead an artifact of the research procedure.

In the second study of the expression of emotion, other members of these two cultures, who had not seen the photographs of facial expressions, were the subjects. Each subject was asked to show how his face would appear if he was the person described in one of the emotion stories. Videotape recordings were made of the attempts to show emotions in the face. Only the records of the Fore have been analyzed to date.

Unedited videotapes of nine members of the Fore were shown to 34 college students in the United States, who were asked to judge what emotion was being expressed. Figure 5 shows some frames from the videotapes of these poses.

Table 9 shows that these American college students, who had never seen any New Guineans, were able to accurately judge the emotion intended by the Fore for four of the six emotions. Happiness, anger, disgust, and sadness were correctly judged, while fear and surprise were not judged accurately. The fear poses were just as often judged surprise as fear, and similarly, the surprise poses were just as often called fear as surprise. Interestingly, as Table 8 showed, fear and surprise were the emotions which the Fore had difficulty in discriminating.

While the level of accuracy achieved in the judgments of happiness, anger, disgust, and sadness was not very high, it was far better than chance. It should be noted that the Fore were not a select



FIG. 5. Video frames of attempts to pose emotion by subjects from the Fore of New Guinea. Copyright © 1972 by Paul Ekman.

TABLE 9
PERCENT CORRECT JUDGMENTS
BY U.S. OBSERVERS
OF FORE FACIAL EXPRESSIONS

Emotion Intended by the Fore	
Happiness	73 ^a
Anger	51 ^a
Disgust	46 ^a
Sadness	68 ^a
Surprise	27 not significant
Fear	18 not significant

^a $p < .01$, binomial test assuming chance to be one-in-six.

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sample of experienced actors, and that the unedited videotapes showed not just the attempts to express each emotion (which we selected to show in Figure 5) but the embarrassment, confusion, frustration, or nervousness of the subjects in reaction to the task and the comments on their performance by their friends who were looking on.

Discussion. We interpret these findings on both the recognition and expression of emotion as clear evidence of universal facial expressions of emotion. The data disprove the argument that our findings from the first three experiments are attributable solely to visual contact among the literate cultures. We have now shown the same facial expressions of emotion in these visually isolated, pre-literate cultures, where the people did not have the opportunity to learn some foreign set of facial expressions from the mass media.

The only way to dismiss this evidence would be to claim that even though these New Guineans were quite isolated they still had seen some Caucasians, sufficient for them to learn to recognize and express uniquely Western facial expressions. This argument seems highly implausible for two reasons. (a) The criteria for selecting subjects in the Fore and the isolation of the Dani make it highly unlikely that they could have learned a "foreign" set of facial expressions so well that they could not only recognize them, but also express them as well as those to whom such facial expressions were native. (b) Contact with Caucasians did not have much

influence on the judgment of emotion. The Fore women, who have had even less contact with Caucasians than the men, did as well in recognizing emotion; in the Fore, a control group of persons who were most Westernized (had been to mission schools, had seen movies, and spoke English) did no better than the least Westernized Fore and, like the latter, failed to distinguish fear from surprise; and the Dani, who have had much less contact with Caucasians than the Fore, did no worse.

A last point which could be raised to discredit the results is the possibility that the investigators might have unwittingly influenced the subjects or the translators to give the preferred response. Precautions were taken in the conduct of these studies to guard against experimenter bias, but the best protection is to have investigators with a different bias or no bias. While the Fore data were gathered by investigators who by that point did believe there are universal facial expressions (Ekman and Friesen), the Dani data were gathered by investigators who had no such commitment and were at least mildly skeptical about universal facial expressions at the time (Eleanor and Karl Heider).

CONCLUSION

The evidence is remarkably consistent from the four experiments and, in our evaluation, conclusively proves that there are universal facial expressions of emotion. We have reported data on five literate cultures, four Western and one Eastern, and on two preliterate cultures from New Guinea. The samples were drawn from six different language groups: Dani, English, Fore, Japanese, Portuguese, and Spanish. The first experiment studied judgment of spontaneous facial expressions in Japan and the United States, showing that these facial expressions were judged the same way by members of both cultures. In the second experiment we then showed through measurement that the same facial behaviors (and, perhaps we can also say, the same specific emotional expressions) characterized the Japanese and American reactions to a stress film. Further evidence of the universality of facial expressions of emotion was obtained in the third experiment, which showed that the same

facial expression was interpreted as showing the same emotion in five literate cultures.

The possibility that these findings might not reflect the operation of a facial affect program, but that facial expressions are pancultural only among people who have had sufficient visual contact to learn each others' facial expressions or learn common expressions from mass media models, was eliminated in studies of two visually isolated, preliterate cultures. The same facial expressions were found for the same emotions among these people who had no opportunity to learn Western or Eastern facial expressions from the mass media and who had seen so few Caucasians that it was unlikely that they could have learned a foreign facial language.

We believe, then, that we have isolated and demonstrated the basic set of universal facial expressions of emotion. They are not a language which varies from one place to another; one need not be taught a totally new set of muscular movements and a totally new set of rules for interpreting facial behavior if one travels from one culture to another. While facial expressions of emotion will often be culture-specific because of differences in elicitors, display rules, and consequences, there is also a pancultural set of facial expressions of emotion.

Let us briefly mention evidence gathered by other investigators which is consistent with our data and our neuro-cultural theory of facial expressions. Two investigators have conducted studies similar to our third experiment. Dickey and Knower (1941) found that Mexicans and Americans interpreted facial expressions as showing the same emotions. Izard (1971) also found this among observers from the United States, England, Germany, Spain, France, Switzerland, Greece, and Japan.

Some investigators have compared blind with sighted children to determine if similar facial expressions occur when there is no opportunity for imitative learning (Eibl-Eibesfeldt, 1970; Fulcher, 1942; Goodenough, 1932; Thompson, 1941). While the absence of vision does not rule out opportunities for the child's facial behavior to be influenced by sighted adults, the evidence of similar facial expressions in blind children does contribute to a formulation which emphasizes that facial expressions are not entirely based on imitative learning.

A last source of complementary findings is the field studies of Eibl-Eibesfeldt (1970). While we consider his evidence on facial expressions of emotion in humans as more illustrative than definitive, he has obtained impressive examples of similar facial expressions of emotion in many different preliterate cultures. Working from an ethological perspective, utilizing very different methods and rules of evidence, and with no knowledge of our work until recently, Eibl-Eibesfeldt has also concluded that there are universal facial expressions of emotion.

Our findings, supported by those of others, now provide the basis for settling the old dispute as to whether facial expressions are completely specific to each culture or totally universal. Our neuro-cultural theory maintains there are both universal and culture-specific expressions. The evidence now proves the existence of universal facial expressions. These findings require the postulation of some mechanism to explain why the same facial behavior is associated with the same emotion for all peoples. Why are observers in all these cultures familiar with a particular set of facial expressions (a set which is only a fraction of the anatomically possible facial muscular configurations)? But they are not merely familiar with these facial expressions. Regardless of the language, of whether the culture is Western or Eastern, industrialized or preliterate, these facial expressions are labeled with the same emotion terms: happiness, sadness, anger, fear, disgust, and surprise. And it is not simply the recognition of emotion that is universal, but the expression of emotion as well. How do we explain that the same facial muscular movements occur in Japanese and Americans in response to a stress film, or that the same facial muscular movements occur whether a New Guinean or an American is asked to show what his face would look like if his child had died, or if he were angry and about to fight, etc.?

We must abandon the notion that facial expressions are a language, where arbitrary facial muscular movements have a different meaning in each culture; but we must also attempt to explain the basis for the demonstrated pancultural facial expressions of emotion. Our neuro-cultural theory postulates a facial affect program, located within the nervous system of all human beings, linking particular facial muscular movements with particular

emotions. It offers alternative nonexclusive explanations of the possible origin of the linkages in the affect program between the felt emotion and the movement of the facial muscles. Our theory holds that the elicitors, the particular events which activate the affect program, are in largest part socially learned and culturally variable, and that many of the consequences of an aroused emotion also are culturally variable, but that the facial muscular movement which will occur for a particular emotion (if not interfered with by display rules) is dictated by this affect program and is universal.

While most of the elicitors and many of the consequences are socially learned and vary with culture, there is some uniformity in both within a culture, and even more within smaller social groupings in a culture. Thus all human beings grow up learning that one facial expression is most often elicited by one set of events while another facial expression is elicited by a different set of events. Further, they learn that a facial expression is typically seen with one set of motor adaptive actions, with particular verbal and vocal behavior, and perhaps with certain psychophysiological changes.

These sets of elicitors and consequences are, then, included with memories, images, and cognitions as part of the experience of happiness, anger, sadness, etc. It is their more or less systematic cooccurrence with facial expressions which leads people to describe these facial behaviors as expressions of emotion. While we claim that most of the elicitors and consequences of each emotion vary with culture, there must be some similarity across cultures as well. Perhaps on an abstract or general level there are commonalities across cultures in some of the elicitors of each emotion, or in some of the consequences, or in both. Or perhaps this is so only at a very early period in life, where similarities across cultures are due to a possible few innate relationships between an elicitor or a consequence and an emotion. These are questions for which there are no conclusive data as yet.

In closing we want again to emphasize that our theory postulates culture differences in facial expression as well as universals, provides a number of explanations as to the source of cultural differences, and describes how these differences may be manifest. It was designed to distinguish cultural differences from universals so that each could be more readily studied. With the establishment of pancultural facial

expressions and the availability of a procedure for measuring facial expressions (FAST), it is now feasible to study systematically the differences in facial expression across cultures. In our laboratory we are at present studying cultural differences in display rules and investigating how expression and recognition of emotion in the face vary with individual differences in mood and personality within our own culture.

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