

HEAD AND BODY CUES IN THE JUDGMENT OF EMOTION: A REFORMULATION¹

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Summary.—On the basis of new research and the literature a reformulation of the relation between nonverbal cues and judgments of emotion which specifies 4 types of nonverbal cues and 2 types of information about emotion is described.

Body movements and facial expressions have been the subject of study and speculation for over forty years. Curiosity has been guided by diverse theoretical foci: early studies explored consistency between nonverbal and other forms of expressive behavior; more recently nonverbal behavior has been included in studies of empathy, clinical judgment, psychotherapeutic interactions or outcomes, and in theories of communication.

Nonverbal behavior has been related, by at least one experiment or theory, to almost every conceivable aspect of the human condition, e.g., to personality, psychopathology, cultural background, social class, etc. Most popular, for the theoretician to assume or explain and for the experimenter to test, has been the contention that emotions are expressed through nonverbal behavior.² Two methods of study have been pursued.³ There have been a few attempts to measure directly how body movements or facial expressions vary under different emotional conditions.⁴ The more usual procedure, however, has been to derive the emotional meaning of nonverbal stimuli from the study of observer judgments. Such studies of the judgment of emotion, usually in response to posed facial stimuli, have served as either the sole data base or the chief illustration of many of the current theories of emotion (Osgood, 1966; Plutchik, 1962; Schlosberg, 1954; Tomkins, 1962, 1963, 1964).

The question of how the interpretation of emotion by the observer might be related to the type of nonverbal cue observed has been restricted to the components of facial expression (Buzby, 1924; Coleman, 1949; Dunlap, 1927; Frois-Wittman, 1930; Hanawalt, 1942; Hanawalt, 1944; Harrison, 1964; Plutchik, 1962; Ruckmick, 1921). Recently, Ekman (1965c) compared head and body

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²For reviews of the literature see: Woodworth and Schlosberg (1954), Allport (1961), Bruner and Tagiuri (1954), Brengelmann (1961), Davitz (1964), Ekman and Friesen (1967b).

³For a discussion of the methodological advantages of these two approaches to the study of nonverbal behavior, direct measurement of the behavior or observers' judgments of the behavior see Ekman (1965a) and Ekman and Friesen (1967b).

⁴For examples of procedures for the direct measurement of nonverbal behavior from either observation or from film records see: Birdwhistell (1952), Ekman (1957), Dittmann (1962), Dittmann (1966), Exline, Gray, and Schuette (1965), Exline and Winters (1965), Ekman and Friesen (1967b).

cues and found that they provide differential information about apparent emotion to an observer; the head is more informative about the *nature* of an emotion (whether the stimulus person appears to feel angry, afraid, sad, etc.), while the body is more informative about the *intensity* of an emotion.

Further distinctions between types of head cues and types of body cues now seem necessary in order to specify more precisely the relationship between non-verbal cue observed and emotional judgment. A revised, still partly speculative formulation to be discussed in detail in this paper was suggested by the results of an experiment originally designed to replicate our previous study of head and body cues and also by current analysis of motion picture film records. The previous work will be summarized, the new experiment will be reported, and the new formulation which specifies the relationships among 4 types of non-verbal cues and judgments of emotion will be presented.

BACKGROUND

The nonverbal behavior shown in still photographs taken during standard stress interviews⁵ was found to communicate to observers information which is systematically related on a moment-to-moment basis with the concomitant verbalization (Ekman, 1964) and which accurately reflects a gross change in the nature of the relationship between two interactants (Ekman, 1965a). A search for the particular cues which might convey such information to observers led to a descriptive analysis of the photographic stimuli, which suggested the hypothesis about a difference in the emotional information conveyed by head and body cues.

In our inspection of the cue properties of the stimuli, impressions about the apparent nature of an emotion from the face were more frequent and more varied than were impressions about the level of intensity. When we looked at just the body, the picture was reversed; we could derive impressions about the apparent intensity, but there were few cues to suggest the nature of an emotion. Schlosberg's (1954) theory of the three dimensions of emotion provided an appropriate judgment task for testing these descriptive observations.

Schlosberg had said that judgments on 2 of his dimensions, Pleasantness-Unpleasantness (P-U) and Attention-Rejection (A-R), would differentiate the nature of the emotion perceived by an observer [more specifically these dimensions would differentiate the six emotional states formulated by Woodworth (1938)], and judgments on the third dimension, Sleep-Tension (S-T), would measure perceptions of the intensity of emotion. The hypothesis was formulated that judges who viewed only head cues would agree more on P-U and A-R judgments (nature of the emotion) than on S-T (intensity of emotion), while judges who viewed only body cues (from the neck down) would agree more on S-T than on either P-U or A-R. The results from a series of 4 experiments supported the hypothesis (Ekman, 1965c).

⁵The stress interview procedure is described most extensively in Ekman (1965a); it is summarized in the method section of this paper.

In discussing the results, the possibility was raised that hand cues might be an exception to the general findings about body cues; instead of providing information only about intensity, hand cues, much like facial cues, might permit perception of the nature of the emotion. A concurrent series of experiments analyzing motion picture film records suggested that the nature of an emotion is not conveyed simply by a particular body part, such as hands, but by body *acts* as distinguished from body *positions*, regardless of body part. In the analysis of motion picture film records, "acts" were defined as readily observable movements with a definite beginning and end which could occur in any part of the body or across multiple body parts simultaneously. "Positions" were defined as the lack of movement for a discernible period of time within any body part.⁶ When acts were classified in terms of distinctive visual appearance, specific hand and foot acts were found to communicate to observers distinctive information about attitudes and traits (Ekman, 1965b; Ekman & Friesen, 1967a); but determining whether the acts also communicated information about emotion was confounded by the judgment task.

EXPERIMENT

Problem

In the previous experiment (Ekman, 1965c) judgments on Schlosberg's P-U and A-R dimensions were intended to measure observers' impressions about the nature of an emotion, and S-T judgments were intended to measure perceptions of emotional intensity. The A-R judgments had to be deleted, however, because, contrary to Schlosberg's claim, this dimension was found to be intercorrelated with both of the other dimensions. This deletion seriously limited the sensitivity of this judgment procedure to perceptions about the nature of emotion, since the single dimension, P-U, could not be expected to discriminate perceptions among, for example, anger, fear, and disgust. The major purpose of this experiment was to replicate the part of the hypothesis which dealt with the ability to perceive the nature of emotion, with a judgment task more sensitive to such perceptions. Woodworth's (1938) scale of six emotions was selected as the judgment procedure, since the data were also to be utilized as part of another set of experiments which would attempt to replicate Woodworth's original work and Schlosberg's attempts to discover the dimensions which underly Woodworth's categories (Boucher & Ekman, 1965).

A second purpose of this experiment was to explore the distinction between body acts and body positions which had been suggested in the concurrent motion picture film analysis. Our expectation that acts would more frequently than positions convey information about the nature of an emotion was difficult to test with still photographs, which were used because of the necessity for replication of the earlier experiments comparing head with body cues. Nevertheless, some still photographs, if they happened to coincide with some point during the pe-

⁶The rule has been adopted that the behavior shown in a motion picture film is a position if there is no observable movement for 2 sec., that is, within 48 frames.

riod of maximum activity rather than with the beginning or end point of an act, might convey at least some impression of movement and perhaps by inference some of the relevant sequential cues. Because of these limitations in the stimuli, the study of acts as contrasted with positions was given the status of a descriptive examination rather than a more formal test of a hypothesis.

Hypothesis: Judges who view the head-cues-only photographs will show more agreement than judges who view the body-cues-only photographs when identifying the nature of the emotion, using the six Woodworth affect categories. Although not stated as a hypothesis, it was expected that, in those instances when there is high judge agreement about the nature of the emotions expressed by body cues, the stimuli will probably be body acts rather than positions.

Method

The nonverbal stimuli were identical with those utilized in the previous experiment on head and body cues (Ekman, 1965c). The still photographs were drawn from records taken during 5 stress interviews. These interviews consisted of 2 parts, a 10-min. stress phase in which the interviewer, a senior psychiatrist or psychologist, criticized the competency and motivation of the interviewee, a student in psychology or psychiatry; and a 10-min. catharsis phase in which the procedure was explained, the interviewee was praised and humor was attempted. In 2 of the interviews the stimuli were profile views of the interviewee; in 3 interviews the stimuli were head-on views of the interviewee. Twelve photographs were selected in a random fashion from each of the 5 interviews: 6 photographs from the stress phase and 6 from the catharsis phase. These 60 photographs were then made into 2 separate cue versions: head cues and body cues (the body up to the neck). The 60 stimuli were arranged randomly and projected for 20 sec. each through a 35-mm. Kodak Carousel projector to a group of judges who sat in a darkened classroom, from 5 to 15 ft. from the projection screen. Within the 20-sec. viewing period for each slide, the judges chose a single emotion category from a list of six emotion categories proposed by Woodworth (1938): (1) Love, Happiness, Mirth; (2) Surprise; (3) Fear, Suffering; (4) Anger, Determination; (5) Disgust; (6) Contempt. Independent groups of judges viewed each cue version of the photographs.

Two separate groups of college freshmen served as judges. Judges who failed to respond to all stimuli, who objected to the experiment, or who were foreign-born were omitted; 28 judges remained for the head cues, 22 for the body cues.⁷

Results

Measures of judge agreement which require ordinal data were not used, since analysis of these data and re-analysis of Schlosberg's and Woodworth's data have

⁷The number of persons thus eliminated comprised less than 10% of the total sample. The number of male and female judges within each group was about equal.

shown that the six Woodworth emotions form neither a linear nor a circular scale as Schlosberg had proposed (Boucher & Ekman, 1965).

The simplest measure of judge agreement was the proportion of judges who gave the modal response for each stimulus; according to the hypothesis, these proportions should be higher for judgments of the head than of the body stimuli. Table 1 shows a frequency distribution of the 60 photographs for each cue condition in terms of the number of stimuli which elicited differing proportions of judges responding with the modal affect. The distribution is in the predicted direction, since many more head stimuli than body stimuli elicited high propor-

TABLE 1
DISTRIBUTION OF STIMULI IN TERMS OF PROPORTION OF JUDGES
GIVING THE MODAL AFFECT CATEGORY FOR EACH CUE CONDITION

| Proportion of Judges Giving the Modal Affect | Cue Condition | |
|---|----------------|----------------|
| | Head (N=28) | Body (N=22) |
| 20-29 | 3 | 7 |
| 30-39 | 16 | 24 |
| 40-49 | 12 | 12 |
| 50-59 | 10 | 15 |
| 60-69 | 5 | 2 |
| 70-79 | 7 | 0 |
| 80-89 | 4 | 0 |
| 90-100 | 3 | 0 |
| Total N Stimuli | 60 | 60 |

tions of judges giving the modal response. A test of significance was applied by obtaining a difference score for each stimulus between the proportion of judges giving the modal response to the head version and to the body version and evaluating the array of 60 such difference scores with the Wilcoxon matched-pairs signed-ranks test (Siegel, 1956). The results support the hypothesis: there was more agreement for head cue than for body cue judgment ($z = 3.24, p \leq .001$).

Other investigators of facial expression have suggested that the smile is responsible for much of the agreement among judges of emotion (e.g., Cline, 1956). In order to determine that the difference in level of agreement between judges of head and judges of body cues was not due solely to the presence of smiles in the faces, a separate comparison was made excluding the 18 stimuli which contained any semblance of a smiling mouth. The hypothesis was still supported: head cues elicited greater agreement than body cues in terms of the proportion of judges giving the modal response ($z = 2.01, p = .02$).

The data were examined further in order to determine whether the difference in agreement between judges of head and judges of body cues might have been limited to only 1 or 2 of the emotions, or to only 1 or 2 of the 5 stimulus persons shown in the photographs. Detailed inspection of the results for each

stimulus showed that: (a) a minimum of 2 and usually 4 stimulus persons contributed photographs which elicited a first mode in each emotion category under each cue condition; (b) judge agreement was higher for head cues than for body cues for 4 of the 5 stimulus persons, the fifth eliciting equal agreement; (c) judge agreement was higher for head cues than for body cues for stimuli judged as showing Happiness, Surprise, Fear and Contempt, while with Anger and Disgust the cue version which elicited higher judge agreement varied with the stimulus person.

The distinction between body acts and positions, developed from the analysis of motion picture films, had suggested that acts would elicit more judge agreement than positions about the nature of the emotion. Two independent raters sorted the 60 body-cue still photographs into those which appeared to represent an act and those in which there was no apparent act. There was initial agreement on about 85% of the stimuli; differences were arbitrated. The 60 stimuli were rank ordered in terms of the proportion of judges giving the modal response to each stimuli. The top quartile, those stimuli which elicited the highest judge agreement, contained 13 acts and 2 positions; the bottom quartile, those stimuli which elicited the lowest judge agreement, contained 2 acts and 13 positions.

The results for each stimulus were examined in order to determine that this difference in agreement for acts and positions was not due solely to 1 or 2 stimulus persons, or 1 perceived emotion. Higher agreement on acts as compared to positions was found for 4 of the 5 stimulus persons, and for 3 of the emotion categories (Happiness, Anger and Disgust).

No consistent pattern was found for the modal judgment of emotion for the head-cue and body-cue versions of the same stimulus. The extent of agreement on one cue version was unrelated to the extent of agreement on the other; high agreement on one cue version was unrelated to the same emotion being perceived for the other; high agreement on both cue versions did not coincide with the same emotion being perceived for both head and body. The same emotion was perceived for both head- and body-cue versions for 13 of the 60 stimuli; 7 of these were judged happy, with 1 stimulus person contributing a disproportionate number, 5. The combination of one cue being judged happy when the other cue was judged angry was the most frequent occurrence: there were 16 such photographs.

DISCUSSION

Limits of This Study

Three aspects of the stimulus materials in this experiment might limit the generality of the results: the number and type of persons shown in the photographs, the sampling situation, and the use of still photographs.

While 5 stimulus persons is a small sample, it is no smaller than the sample usually utilized in judgment studies of emotion (e.g., Plutchik, Schlosberg). The

distribution of emotions judged for each of the 5 persons suggests that they were not unique, nor all identical: 1 person was usually judged as angry or disgusted, another as happy or surprised, while the other 3 elicited a more even distribution of emotional judgments. Regardless of these differences between stimulus persons, the results on head as compared to body and on acts as compared to positions were consistent for 4 of the 5 stimulus persons.

The second possible limitation in these stimuli was the sampling situation, that of a stress interview. While such an interview is not typical of all interviews or of interpersonal conversations, it could be argued that it provides a more realistic setting for sampling nonverbal behavior than is obtained through posing. The behavior was emitted during a conversation rather than when attention was self-consciously focused on transmitting through the nonverbal channel alone; and the emotional reactions were in response to another person, not simulated at the request of an *E*. The fact that the range of emotions judged for these stimuli is about the same as for Schlosberg's posed faces suggests that this situation is at least no more atypical than posing in terms of the emotions which will be perceived.

Representing nonverbal behavior through still photographs taken on a fixed-time-interval schedule may have seriously limited the results, particularly for the body-act stimuli. Such still photographs may not necessarily misrepresent facial expressions, if they were fleeting expressions or expressions which were held for a few seconds, or body positions, since by definition such body stimuli are static. But a body act is a movement sequentially over time; the still photograph not only freezes the movement, but if the photographs are taken on an arbitrary schedule they may freeze the act at the beginning, middle or end. Such misrepresentations of body acts should have limited the absolute amount of agreement which was achieved by the judges for these stimuli. If the experiment were repeated with motion picture film representations of nonverbal behavior, the level of agreement about the nature of the emotion shown in the stimuli might be the same for head and body *acts*, but the over-all comparison would still show the head elicits higher agreement than the body, since often the body is not engaged in an act.

The results of this experiment replicate the earlier finding (Ekman, 1965c) that head cues more frequently than body cues convey information about the nature of an emotion. This experiment has also provided some confirmation of the distinction between body acts and positions and some data about the relationship between perceptions of head and body, which merit discussion and serve as the basis for a reformulation of our hypothesis about the relationship between judgment of emotion and nonverbal cue observed.

A Reformulation

The results of this experiment are in agreement with our motion picture film studies of hand and foot acts, showing that acts more often than positions

convey information about the nature of an emotion. Perceptions about the nature of an emotion shown by a stimulus person can be general or specific or both: the most general determination could be called a judgment of gross affect state, that is, whether the emotion is positive or negative, pleasant or unpleasant; more detailed information about the nature of the emotion would specify the particular emotion or emotions involved, that is, whether the gross affect state of unpleasantness is anger, fear, disgust, etc., or whether the gross affect state of pleasantness is happiness, surprise, interest, etc. If the specific emotion is known, the gross affect state is also known (except for surprise); but knowledge of the gross affect state may not include knowledge of the specific emotion(s) involved. We hypothesize that body acts typically convey information about specific emotions, while body positions will provide either no information about the nature of the emotion or information only about the gross affect state, rather than about specific emotions.

Our underlying assumption is that, apart from inhibitory efforts based on situational or personality constraints on expression, when a person is emotionally aroused his body will tend to move rather than remain still.⁸ The likelihood that people will act when emotionally aroused could be explained by a number of possible causal factors: (1) movements might be neurophysiologically linked to emotional arousal; or (2) movements might illustrate pictorially an affective theme which is concurrently being verbalized; or (3) movements might be learned adaptive responses to arousal which modulate, enhance, reduce, or discharge the emotional arousal. The last explanation of why people act when emotionally aroused assumes a major difference between the face and body: the face usually is an affect display system (although actions such as lip-biting can also show adaptations to affect), while the body shows the adaptive efforts of the organism to cope with the affect state. Such body actions can be instrumental or interpersonal or self-directed; they can be defenses against experiencing the affect, as well as actions which enhance or reduce the affective experience. We believe these actions are socially learned, many of them early in life, and that in the adult they are maintained by habit usually in a reduced miniature form. While these actions when first acquired should have been functional, they will continue to be manifest, even though in their compressed form they no longer are necessarily carried through to the point of actually achieving an instrumental or interpersonal goal.

We assume that the type of movement shown, in terms of its distinctive visual appearance, will differ for the specific emotion aroused and that this is the reason why observers are able to infer the presence of a specific emotion from observing a body act. For example, an act which is an adaptive response to fear

⁸Tomkins in personal communication has pointed out that fear may be an exception, since there may be frozen immobility rather than action when fear is aroused. We would agree but would expect that when fear is suddenly aroused there would be some movement into the frozen fear position.

will usually look different from an act which is an adaptive response to anger (although conceivably there are adaptive patterns which might be uniformly applied to a number of affect states and thus would deprive the observer of any distinctive visual cues); if there are movements which are neurophysiologically linked to each emotional state, these movements will differ in appearance; and, movements which pictorially illustrate affect themes being verbalized will differ with different themes.

This explanation of the relationship between acts and emotional arousal is completely speculative, although there is some research which is consistent with it.⁹ Some examples can illustrate how observers might infer specific emotions from nonverbal acts. Anger could be conveyed by the act of hitting another person (which might enhance or reduce the affect state); by "picking" movements which attack the self; by pushing the hands away from the body rapidly and repeatedly as if to remove the source of stimulation (perhaps a defense against being angry); by waving a fist in the air while verbally describing an angry encounter. Fear could be conveyed by trembling movements (perhaps neurophysiologically linked to fear); by movements which block vision (defense against further fear arousal); by movements which orient the body for escape (adaptive response); or by shaking clasped hands up and down in front of the chest, acting out "wailing" while verbally describing a frightful scene. It would be interesting to find out whether a judge can determine as readily the specific emotion if the nonverbal behavior shows an attempt to enhance, reduce, defend against, or illustrate pictorially an affect state.

Consistent with our assumption that acts occur when a person is emotionally aroused would be the expectation that still body positions occur either when there are low levels of arousal or when an act is inhibited and a tense position results. At either extreme, when the body is very relaxed or muscularly tense, information about gross affect states can sometimes be inferred from body positions; but this is a relative determination and must take into account the typical or usual body position for a given person and/or situation. There are probably *basal* positions which are usual for specific types of interpersonal interactions and which reveal little about the nature of the emotion experienced precisely because they are normative. Some deviations from the basal positions toward a more effortless rest will be perceived as positive affect; some deviations toward a position requiring considerable maintenance effort will be perceived as negative affect. Such deviant positions may sometimes communicate inaccurate information; a slouched position due to apathy (negative) may be misread as relaxation (positive). Similarly, a tense position due to excitement and elation restrained in muscular tension (positive) may be misread as tense discomfort. Finally, many deviant positions may not reliably communicate even gross affect states.

⁹Dittmann's (1962) study of a single patient found that the particular area of the body which is in movement is related to the nature of the emotion experienced. Our still tentative studies (Ekman, 1965b; Ekman & Friesen, 1967b) found that specific acts convey specific information about attitudes and traits.

A basal position in a job interview between two males would be the following: both sitting upright in their chairs, with legs crossed only at the knees or with both feet on the floor in front of the person and with the hands resting on chair arms or in the lap on top of each other or loosely folded. Such a basal position reveals little information about the emotion experienced, except that the person is showing the usual emotion associated with the situation. If, however, the body is slouched in the chair or the legs are crossed with ankle at knees, informality or relaxation will probably be perceived; if the upper trunk is pulled back and taut or the hands are tightly clasped over crossed knees, negative affect will probably be perceived.

The discussion of positions has emphasized that deviant positions are more informative than basal positions but it has not explained why deviant positions usually convey only gross affect states rather than more specific emotions. Still positions can occur for two reasons: either the person is not emotionally aroused or he is quite aroused but is attempting to inhibit expression. In the former case he should appear muscularly relaxed, and the observer will probably infer a positive gross affect state. If the position is a defense against direct expression of an emotion in which an act is being bound by muscular tension, the observer will probably interpret the tense position as negative gross affect, but to the extent that the inhibition is successful, the clues to the specific emotion will be absent. When the body is still, the observer has a more restricted sensory input than he does when an act occurs; he does not have as much opportunity to infer a specific emotion since such variables as speed of movement, area of excursion, emphasis qualities, and changing positions are eliminated. Exceptional rare positions may convey more specific information about emotion.

The division of body cues into acts and positions and the difference in the level of information about the nature of emotion which each conveys have a parallel for head cues if they are divided into facial expression and head orientation cues. Facial expressions, the movements, and still positions of the facial features, usually convey information about specific emotion(s). Head orientation, the position or movement of the total head in an up-down and/or left-right axis, usually conveys information only about the more gross affective states rather than about specific emotions.

The relative frequency of occurrence of body acts and facial expressions will depend in part on characteristics of the stimulus person and on the situation. Individual variations in frequency of body acts could reflect ethnic background or social class (cf., Efron, 1941; Miller & Swanson, 1960) or personality characteristics. Certain situations, because of urgency, informality or difficulty in verbal discourse, may elicit a high rate of body acts.¹⁰ Thus, it is conceivable

¹⁰There probably are well-accepted implicit expectations about the rate, intensity and type of body act which is situationally appropriate for a given kind of person. Thus impressions that a person is a foreigner, is uncomfortable, or is crazy, may in part at least reflect that his body behavior is violating the situational or role rules.

that under special circumstances the frequency of body acts might be high enough for the perception of the specific emotion from this cue source to be comparable to the perception of specific emotion from facial cues. Perhaps a poker-faced individual with a mobile body might even reverse the general relationship. In establishing the difference in the type of information communicated between head and body cues, it is necessary, therefore, to be explicit about the degree to which the sample of stimulus persons and situations is representative. Dittmann's (Dittmann, Parloff, & Boomer, 1965) study, in which similar information about pleasantness (a judgment of gross affect state) was judged from either head or body cues, is explicable in these terms. His results do not contradict our description of the difference in information available from head and body cues, since Dittmann's sample was not representative but was pre-selected to include only those body stimuli which *he* felt conveyed pleasantness information. The fact that judges' agreement on such pre-selected body stimuli was comparable to that obtained with head stimuli confirms our prediction that *some* body stimuli do contain information about the nature of the affect.

So far, in distinguishing among nonverbal cues, only one type of observer inference about emotion has been considered, the judgment of the nature of the emotion [gross affect state or specific emotion(s)]. In the original formulation (Ekman, 1965c) another type of affective information was also said to vary as a function of the cues observed, i.e., information about the intensity of the emotion. Intensity was said to be less apparent than the nature of an emotion in head cues and more apparent than the nature of an emotion in body cues. We no longer believe this to be an adequate description, particularly if the distinctions between types of body cues and types of head cues are considered. An observer can infer information about intensity of emotion from any of the cues discussed, although judgments differ depending upon whether body acts, body positions, head orientations or facial expressions are viewed. Facial expressions, in interpersonal settings except for the most intimate, will usually not show either the drooping face or the unusually mobile accentuated expression relevant to perceiving either extreme of intensity. While the face is generally alive and mobile during conversation, and potentially could readily display the entire range of intensity, politeness usually inhibits extreme facial expressions, which may instead be reflected in body acts or positions.¹¹ Head orientation probably can convey a wide range of intensity information but may be as constrained as facial expressions in usual conversations; downward tilts, tilts away, rapid shifts in orientation may furnish cues about intensity and general level of arousal. Body acts will usually be perceived as of moderate to high intensity, depending upon

¹¹It remains an open question whether the differing intensities of a single emotion are exaggerations or enlargements of the same visual facial pattern, or different visual patterns, or changes in duration. Another unsettled issue is whether the intensity of the different specific emotions has the same range, the same slope to their arousal gradient and reach the same level of arousal at maximum intensity.

the speed of the movement, the area of excursion and the presence of emphasis qualities. There are body acts which, by their visual appearance and particularly by their very slow performance, can suggest low intensity of emotion but these are infrequent. Body positions which appear to involve an effortless rest will be perceived as low in intensity, while body positions which appear taut, as if they required considerable maintenance effort, will be perceived as high intensity.

This discussion has, throughout, compared independent perceptions of head and body; yet, in most natural situations, the observer sees both at once. The fact that both cue sources can carry information about the nature of emotion, even though head cues do so more frequently than body cues, raises the interesting question of how these two sources are related at any given moment. The results from this and the earlier experiments (Ekman, 1965c) showed that the emotion judged from the face usually differs from the emotion judged from the body. Such contradictory communication of affect by these two cue sources is perhaps due to conflict within the stimulus person; since the stress interview was a highly conflictual situation for the interviewees, we might expect that in other less conflictual interactions, the emotions perceived from head and body cues would more frequently be the same. When the information conveyed by head and body cues does disagree, the question arises as to which source of information might be more accurate or whether they might both accurately reflect different aspects of personality. We (Ekman & Friesen, 1967b) are developing a theory which differentiates among facial cues, hand cues, foot cues, and postural cues in terms of their leakage of suppressed or repressed information and betrayal of simulated affect.

Before closing, some qualifications on the discussion should be noted. Only spontaneous, interactive, nonverbal behavior which occurs when a stimulus person is engaged in a conversation and when the emotional arousal is due at least in part to the interaction has been considered. The hypotheses about head and body cue differences might not hold for nonverbal behavior of a person alone or in unusual situations where the source of emotional arousal has no interpersonal referent. While we have attempted to link the observer's judgments to the type of cues he perceives, we have not analyzed the processes an observer uses to evaluate a nonverbal cue and make his judgment. Further, our concern has been with the observer's judgment of apparent emotion, his inferences about the emotional state of the stimulus person, without in any way assuming that such inferences must correspond with the subjective emotional sensations of the stimulus person. We have argued elsewhere (Boucher & Ekman, 1965) that there is no reason to assume that a model of the perception of emotion from nonverbal cues, face or body, would directly correspond to a model of subjective sensations of emotion, the cue properties of the appearance of the person, or the neurophysiology of the emotional states.

The results and discussion of this and the past experiments on head and body cues

have suggested a reformulation of the relationship between nonverbal cues and judgments of emotion which specifies four types of nonverbal cues (body acts, body positions, facial expressions and head orientation) and two types of information about emotion (the nature of the emotion, including inferences about gross affect state and specific emotions, and the intensity of the emotion). A central assumption is that the face is an affect display system, while the body shows the person's adaptive efforts regarding affect, or pictorial illustrations of some aspect of an affective experience. While the evidence supports the general differences proposed, this descriptive theory now exceeds the data, and many of the specific relationships, while logically derived, are yet to be tested.

Information about the *nature of the emotion* involved perceptions of only the more gross affective state, as well as the perception of more specific emotion(s). Specific emotions can frequently be perceived from facial expressions and from body acts, while both head orientation and body positions will most frequently only allow perception of gross affective states, and observers may not always agree about that. Since the rate of facial expressions usually far exceeds the rate of body acts, perceptions of specific emotions can more frequently be made from head than from body cues.

Information about the *intensity of emotion* is available from both head and body cues. Facial expressions can convey the full range of intensity of information, although in many interpersonal settings the facial expressions will not show the cues relevant to perceiving either extreme of intensity. Head orientations can also convey the range of intensity information. Body acts usually convey from moderate to high intensity, while body positions can convey the full range of intensity. The rules of conversation which may inhibit the drooping facial expression or grimace are not as stringently applied to body acts and positions, which may show the extremes of intensity which are not permitted in the face and thus at times be more relevant to perceptions of intensity than head cues.

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