

In this study, we examined the degree of cultural similarity and specificity in emotional experience by asking subjects in the United States and Japan to report their experiences and reactions concerning seven different emotions. The data used for this study were part of a larger cross-cultural study of emotion antecedents and reactions involving more than 2,000 subjects in 27 countries (Wallbott & Scherer, 1986). The American-Japanese comparison is a particularly interesting one, given theoretical and anecdotal evidence suggesting differences in emotion processes between the two cultures, especially concerning the "inscrutability" of the Japanese. Data were gathered specifically to test the component-process model of emotion. The data yielded a high degree of cultural agreement concerning many aspects of the antecedent/evaluation process, replicating the general findings from all 27 cultures, and suggesting a large degree of universality in emotional experience. There were cultural differences as well, which mostly centered on reactive/expressive aspects of the emotion. The findings are discussed in terms of a model of emotion that incorporates the possibility of innate emotion programs (to account for the large degree of cross-cultural similarity) setting the stage for cultural constants in emotion, but allows for cultural and individual learning processes to account for cultural differences in other aspects.

ANTECEDENTS OF AND REACTIONS TO EMOTIONS IN THE UNITED STATES AND JAPAN

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Cross-cultural research on emotion has traditionally focused on examining the universal recognition of certain facial expressions of emotion (e.g., Ekman, 1972, 1973; Ekman & Friesen, 1971;

AUTHORS' NOTE: This research was supported in part by an American Psychological Association Minority Fellowship to David Matsumoto, under Clinical Training Grant 5 TO1 MH13833 from the National Institute of Mental Health. Address all correspondence to David Matsumoto, The Wright Institute, 2728 Durant Avenue, Berkeley, CA 94704, USA.

JOURNAL OF CROSS-CULTURAL PSYCHOLOGY, Vol. 19 No. 3, September 1988, 267-286
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Ekman, Sorenson, & Friesen, 1969; Izard, 1971). These studies have provided evidence that expressions of anger, disgust, fear, happiness, sadness, and surprise are universally recognized in both literate and preliterate cultures. More recent research has also documented the existence of a seventh universal expression, that of contempt (Ekman & Friesen, 1986).

Recognition of facial expressions, however, is but one aspect of emotion; questions can be raised concerning cross-cultural similarities and differences about a host of other dimensions of emotion as well. These include, for example, examining cultural differences in the ecology of emotions, the regulation and control of emotions, the subjective evaluation of eliciting situations, and the verbal and nonverbal reactions to emotional situations.

Unfortunately, these dimensions do not lend themselves easily to laboratory research. On one hand, emotion induction in the laboratory is often inefficient, since it results at best in rather weak or diffused emotional experiences. On the other hand, it is difficult to gain access to strong emotions experienced outside the laboratory, and it is almost impossible to obtain some types of objective measurements of emotional responses, such as physiological reactions, in real-life situations (Scherer, 1986; Wallbott & Scherer, 1986).

Assessing these dimensions of emotion through a questionnaire approach, however, may be a way of circumventing these problems. For instance, subjects may be asked to report on the situations that lead up to different emotions, their physiological, verbal, and nonverbal reactions to the situations, and a host of other questions concerning their evaluation of the emotion-eliciting event. Of course, differential recall and self-presentation processes may certainly bias the results obtained by questionnaire, but important advantages are gained: There is no other way to assess subjective feeling states and evaluations of situations without asking subjects; this methodology is easily translatable to cross-cultural work; data can be used to examine cultural similarities and differences in the report of emotional processes; and more detailed hypotheses concerning cultural differences in emotion-eliciting situations and their consequences

can be formulated for rigorous testing under more controlled conditions.

Three studies have already used questionnaires to assess different emotion-eliciting situations and subjects' evaluations of and reactions to these situations. The first included about 600 participants from six European countries (Scherer, Summerfield, & Wallbott, 1983); the second involved 800 subjects in eight European countries (Scherer, Wallbott, & Summerfield, 1986; Wallbott & Scherer, 1985); and in the third, a random sample of European subjects ($N = 174$) was compared to samples from the United States ($N = 170$) and Japan ($N = 171$), to test whether the results obtained in Europe would hold for non-European countries (Scherer, Matsumoto, Wallbott, & Kudoh, in press).

The results from these three studies, as well as others (e.g., Boucher & Brandt, 1981) have provided us with a wealth of evidence indicating universality concerning certain aspects of the emotional process. For example, across cultures, anger and joy experiences were found to be more recent than fear or sadness experiences; subjects across all cultures also tend to experience joy and sadness more intensely and for a longer period of time than fear or anger. It also appears that negative emotions such as anger or fear require a greater degree of social control or regulation than joy (see the works cited above for detailed reports of these findings).

Cultural differences, however, have also been documented, particularly in the latest study involving Japanese subjects (Scherer et al., in press). For example, the antecedent situations leading up to some emotions were different for the Japanese compared to the Americans and Europeans. Also, the Japanese subjects tended to report lower intensity ratings for their experiences, in terms of their subjective intensity ratings as well as for their expressive nonverbal responses.

Major drawbacks of this previous work were that it sampled only four emotions, and that most of the subject population was European; clearly other Asian populations were underrepresented, and other non-Asian, nonwhite cultures were not sampled. Further,

many of the questions asked of our subjects had open-ended responses; thus classification of the subjects' responses was problematic. Our last attempt to investigate further universals and cultural differences in emotion processes used a questionnaire approach to sample the experiences of seven different emotions from (so far) more than 2,000 subjects in 27 countries on five continents (Wallbott & Scherer, 1986). This study represented an improvement over our earlier attempts by (a) sampling subjects from a wide range of cultures, (b) asking detailed and focused questions concerning emotional experiences and their antecedents and consequences, and (c) including closed-ended alternatives to standardize coding and eliminate experimenter and cultural bias in the evaluation of responses. The types of questions asked were based on our previous empirical work, summarized in Scherer's (1984a, 1984b, 1986) *component process* model of emotion. The choice of closed-ended alternatives was based on the response categories that were found to occur most frequently in the earlier free-response studies.

The overall data analyzing differences and similarities among the emotions have been reported elsewhere (Wallbott & Scherer, 1986). In that report cultural differences were not examined, because no a priori hypotheses concerning cultural differences could be made on such a large number of countries, and because interpretation of significant cultural differences even if found would be difficult. Here we report in detail, however, differences among both emotions and cultures, using an American-Japanese comparison from the larger data set. This comparison is especially compelling, because of both empirical and anecdotal evidence concerning major differences in emotionality between the Japanese and Western cultures (see, for example, Doi, 1973; Ekman, 1972; Kudoh, in press; Lebra, 1983; Scherer et al., in press, Tanaka-Matsumi & Marsella, 1976). By testing two cultures that appear to be very discrepant concerning emotion, this comparison provides a basis for hypothesizing and testing cultural differences in the larger sample.

METHOD

SUBJECTS

Subjects were 81 American undergraduates at the University of California, Berkeley, and 193 undergraduates from two comparable universities in Japan (Osaka University of Education, Osaka, and Keio University, Tokyo). All subjects participated in partial fulfillment of course requirements. Of the 81 American subjects, 44 were male and 37 were female; of the 193 Japanese subjects, 97 were male and 96 were female. The mean age of the American subjects was 19.4, and the mean age of the Japanese subjects was 20.9.

THE QUESTIONNAIRE

Given our previous experiences with the open-ended questionnaire format and the opportunity to test specific hypotheses derived from the earlier studies, we decided to use a questionnaire with closed-ended alternatives in this study. The overall goal in designing this questionnaire was to assess four different aspects of the emotional process: the ecology of emotional experiences; the regulation or control of emotion; the subjective evaluation of emotion-eliciting events; and verbal, nonverbal, and physiological reactions. At the same time, however, we needed an instrument that was manageable for the subjects and researchers. The design of the final questionnaire was aided by input from emotion researchers in 24 countries. The choice of the answer categories was based on the response categories that were found to occur most frequently in the earlier open-response studies.

Experiences concerning the emotions joy, fear, anger, sadness, disgust, shame, and guilt were assessed. There were two pages of questions for each emotion. The first page listed the target emotion at the top, and asked the subjects first to recall and describe a situation in detail in which they felt that emotion. Immediately after,

they were asked the following questions concerning the emotion and situation (response alternatives in parentheses):

- *When* did this happen? (days ago; weeks ago; months ago; years ago)
- *How long* did you feel the emotion? (a few minutes; an hour; several hours; a day or more)
- *How intense* was this feeling? (not very; moderately intense; intense; very intense)
- Did you try to *hide* or *control* your feelings so that nobody would know how you really felt? (not at all; a little; very much; not applicable)
- Did you *expect* the situation to occur? (not at all; a little; very much; not applicable)
- Did you find the event itself *pleasant* or *unpleasant*? (pleasant; neutral; unpleasant; not applicable)
- How important was the event for your *goals, needs, or desires* at the time it happened? Did it *help* or *hinder* you to follow your plans or to achieve your aims? (it helped; it didn't matter; it hindered; not applicable)
- Would you say that the situation or event that caused your emotion was *unjust* or *unfair*? (not at all; a little; very much; not applicable)
- Who do you think was most *responsible* for the event in the first place? Check one, the most important, of the following: (not applicable; yourself; close relatives; close friends; colleagues/acquaintances; strangers; authority figures; natural forces; supernatural forces; fate; chance)
- How did you evaluate your *ability to act on* or to *cope with* the event and its consequences when you were first confronted with this situation? Check one, the most appropriate, of the following: (I did not believe any action was necessary; I believed that I could positively influence the event and change the consequences; I believed that I could escape from the situation or avoid negative consequences; I pretended that nothing important happened and tried to think of something else; I saw myself as powerless and dominated by the event and its consequences)

- If the event was caused by your own or someone else's behavior, would this behavior itself be judged as *improper* or *immoral* by your acquaintances? (not at all; a little, very much; not applicable)
- How did this event affect your feelings about yourself, such as your *self-esteem* or your *self-confidence*? (negatively; not at all; positively; not applicable)
- How did this event change your *relationships* with the people involved? (negatively; not at all; positively; not applicable)

In addition to these questions, subjects were asked to check each of the following bodily symptoms, expressive reactions, and verbal reactions they experienced:

- *Bodily symptoms*: do not remember; lump in throat; change in breathing; stomach troubles; feeling cold, shivering; feeling warm, pleasant; feeling hot, cheeks burning; heart beating faster; muscles tensing, trembling; muscles relaxing, restful; perspiring, moist hands; other symptoms
- *Expressive reactions*: do not remember; laughing, smiling; crying, sobbing; other changes in facial expression; screaming, yelling; other changes in voice; changes in gesturing; abrupt bodily movements; moving toward other people or things; withdrawing from people or things; moving against people or things, aggression; other expressive reactions
- *Verbal reactions*: silence; short utterance; one or two sentences; lengthy utterance; speech melody changes; speech disturbance; speech tempo changes; other verbal reactions

The original questionnaire was drafted in English. When a final version was developed, it was translated into Japanese. Accuracy of the translation into Japanese was verified using a back-translation procedure. The final version used in the study produced exactly the same translations in Japanese and English. For more information concerning questionnaire development, see Wallbott and Scherer (1986).

PROCEDURES

All subjects were tested in group sessions. Subjects were told that we were interested in the different types of emotional experiences people have in everyday life, and that we would be asking them to recall occasions on which they experienced each of the seven emotions. They were told that there were two pages of questions for each of the emotions, and that the emotion was specified at the top of the page. For those questions in which there were several answer alternatives, they were instructed to circle the most appropriate alternative. If none of the alternatives applied to the specific situation, or if the question was not appropriate, the subjects were requested to circle "not applicable."

Before beginning the questionnaire, each of the subjects was asked to report some background information, especially age, sex, field of study, birthplace and place of upbringing, and parents' places of birth. All subjects participating in the study were native to their respective countries, as were their parents. After these questions were answered, subjects were given an hour to complete the questionnaire, which was sufficient for all subjects to proceed at a comfortable pace.

RESULTS

THE ECOLOGY OF EMOTIONAL EXPERIENCE

For all questions concerning the ecology of emotional experience, the regulation and control of emotion, and the subjective evaluation of emotion-eliciting situations, scale values were assigned to each of the response alternatives. A mixed two-factor analysis of variance (ANOVA) was computed, using culture (2) as the between-subjects factor, and emotion (7) as the within-subjects factor. Raw scalar scores were used as the dependent variable rather than standard scores; while the use of standard scores eliminates

response set differences between the cultures, it also omits the possibility of finding culture main effects, and allows only the detection of differences among emotions or in the interaction. We chose to focus only on the main effects of culture and emotion, ignoring possible interaction effects, since there were no a priori reasons to predict interaction systematically, and since our examination focused only on basic differences between cultures or emotions. In the few cases where interaction was found, it was inexplicable and, in any case, the associated effect sizes were small in comparison to those for culture and emotion. Finally, cases where "not applicable" was chosen as a response were not included in these analyses, because of the small number of cells.

When did this happen? The main effect for emotion was significant ($F[6, 1897] = 19.5, p < .001$), but the main effect for culture was not. Student-Newman-Keuls tests ($\alpha = .05$ on all Newman-Keuls reported) on the seven emotion means collapsed across culture indicated the following ordering, from the most recently reported emotion to the least recently reported emotion: disgust > joy = anger = shame = guilt > fear = sad. If we consider responses to this question to reflect the degree to which these emotions occur in everyday life, we can conclude that disgust experiences are most frequent, with fear and sad experiences the least frequent, and that this was true of both cultures.

How long did you feel the emotion? Both main effects were significant (emotion, $F[6, 1897] = 45.7, p < .001$; culture, $F[1, 1897] = 7.7, p < .01$). The main effect for culture indicated that, in general, American subjects experienced their emotions longer than did the Japanese subjects. Newman-Keuls tests on the emotion means collapsed across culture indicated the following ordering, from longest experienced emotion to shortest: joy = sad > anger = guilt > fear = shame = disgust. These data suggest that there was cultural agreement concerning which emotions were experienced longer than others.

How intense was this feeling? Again, both main effects were significant (emotion, $F[1, 1897] = 34.3, p < .001$; culture, $F[1, 1897] =$

15.4, $p < .001$). The main effect for culture indicated that American subjects reported feeling the emotions more intensely than did the Japanese subjects. Newman-Keuls tests on the emotion means collapsed across culture indicated the following ordering, from the most intensely reported emotion to least intensely reported: sad = joy = anger = fear > disgust > guilt = shame. Thus the two cultures did agree on which emotions were the most intense.

REGULATION AND CONTROL OF EMOTION

The main effect for emotion was significant ($F[6, 1897] = 45.3$, $p < .001$); contrary to expectations, however, the main effect for culture was not. Newman-Keuls tests on the emotion means collapsed across culture produced the following ordering of the emotions, from those that were controlled the most, to those that required the least amount of control: sad = shame = guilt > fear = anger = disgust > joy. Thus both cultures agreed that sadness, shame, and guilt were associated with the greatest degree of social regulation, while fear, anger, and disgust were associated with less control, and joy was associated with the least amount of control.

THE SUBJECTIVE EVALUATION OF EMOTION-ELICITING SITUATIONS

Expectation. The main effect for emotion was significant ($F[6, 1852] = 9.2$, $p < .001$), while the main effect for culture was not. Newman-Keuls tests on the emotion means collapsed across culture produced the following ordering: joy = guilt > fear = anger = sad = disgust = shame. These data suggest that joy- and guilt-eliciting situations were generally more expected or anticipated in both cultures than situations eliciting the other five emotions.

Pleasantness of the event. Again, a significant main effect for emotion was found ($F[6, 1821] = 613.7$, $p < .001$); the main effect for culture was not significant. Newman-Keuls on the emotion means collapsed across culture produced the following order: joy >

fear = shame = guilt > anger = disgust = sad. These findings suggested that both cultures agreed on which events were more or less pleasant than others, with joy events being the most pleasant, and anger, disgust, and sadness being the least pleasant events.

Facilitation of goals. The main effect for emotion was significant ($F[6, 1495] = 178.5, p < .001$); the main effect for culture was not. Newman-Keuls tests on the emotion means collapsed across culture produced the following order: joy > fear = shame > sad = disgust = guilt > anger. Thus the cultures agreed on which emotions helped to achieve goals, with joy being most facilitative and anger being least facilitative.

Unfairness of the event. Again, the main effect for emotion was significant ($F[6, 1421] = 131.9, p < .001$), while the main effect for culture was not. Newman-Keuls analysis produced the following order: anger > disgust > sad > fear = guilt = shame > joy, indicating that cultures agreed on which events were fair and which were not, events producing negative emotions such as anger, disgust, and sadness being most unjust, and joy-producing events being least unjust.

Improper or immoral behaviors. The main effect for emotion was again highly significant ($F[6, 1482] = 89.5, p < .001$); the main effect for culture was not. Newman-Keuls analysis produced the following order: anger = guilt = disgust > shame > sad = fear > joy, suggesting that the cultures agreed on the immorality of the behaviors that led up to their emotions: Behaviors that led to anger, guilt, and disgust were least proper, and behaviors that led to joy were most proper. It is interesting to note here that behaviors that led to shame experiences were not rated as more immoral; this is surprising, given the emphasis on shame as a cultural construct in Japan.

Self-esteem. The main effects for both emotion and culture were significant (emotion, $F[6, 1576] = 234.1, p < .001$; culture, $F[1, 1576] = 12.5, p < .001$). The main effect of culture indicated that the emotion-eliciting events generally had a more positive effect on self-esteem and self-confidence in American subjects than in Japanese subjects. Newman-Keuls analysis on the emotion means

collapsed across culture produced the following order: joy > fear = anger = sad = disgust = shame = guilt. These data indicate that both cultures agreed that joy-eliciting events affected feelings about the self more positively than events eliciting the other emotions.

Relationships. The main effect for emotion was again significant ($F[6, 1487] = 133.1, p < .001$), while the main effect for culture was not. Newman-Keuls analysis produced the following order: joy > sad = shame = guilt > disgust = anger > fear. These data indicate that subjects of both cultures agreed that joy events positively influenced their relationships with others, while disgust-, anger-, and fear-eliciting events negatively influenced relationships.

Responsibility. Subjects were requested to make an attribution concerning the responsibility or cause of the emotion-eliciting event. The original response categories were collapsed to two general categories: "internal" attributions (self) and "external" attributions (others). For each emotion separately, a 2 (culture) \times 2 (internal/external) contingency table was produced, and a chi-square was computed to test cultural differences in the frequencies for these two types of attributions. For joy, shame, and guilt, subjects of both cultures tended to attribute the cause of the event to themselves (all χ^2 s ns). For fear, anger, and disgust, subjects of both cultures tended to attribute the cause of the event more to others than to themselves (all χ^2 s ns). The only significant cultural difference that was found was for sadness: American subjects tended to attribute the responsibility for sadness-eliciting events to others, whereas Japanese subjects tended to attribute the cause of the event to themselves ($\chi^2[1, 169] = 25.9, p < .01$).

The external attribution category was then further subdivided into two categories: attributions to other persons, and attributions to chance or fate. Again, for each emotion separately, a 2 (culture) \times 2 (persons/chance or fate) chi-square was computed to test whether cultures differed in the target of their external attributions. Significant cultural differences were found for joy, fear, and shame (joy, $\chi^2[1, 66] = 11.7, p < .01$; fear, $\chi^2[1, 122] = 15.6, p < .01$; shame, $\chi^2[1, 56] = 12.5, p < .01$); for each of these three emotions, Amer-

ican subjects tended to attribute the cause of the event to other people, whereas Japanese subjects tended to attribute the cause of the event to chance or fate.

A final analysis was done on the percentage of subjects selecting "not applicable" as a response, in order to determine whether there were cultural differences in the degree to which subjects were willing to make such an attribution, as reflected in these proportions. When compared, the proportions of subjects in both cultures selecting this response category indicated that, for joy, fear, anger, disgust, shame, and guilt, significantly more Japanese subjects selected this category than American subjects (z 's = 5.51, 3.52, 4.40, 6.07, 3.52, and 2.31, respectively, p 's < .01). We could not compute similar analyses examining cultural differences on this response category for the other questions because of the small number of cells.

Coping. A 2 (culture) \times 5 (response categories) chi-square was computed for each of the seven emotions separately. The data indicate that there were significant differences for fear, anger, disgust, shame, and guilt (fear, $\chi^2[2, 274] = 10.7, p < .05$; anger, $\chi^2[2, 273] = 16.0, p < .01$; disgust, $\chi^2[2, 269] = 20.0, p < .001$; shame, $\chi^2[2, 272] = 16.8, p < .01$; guilt, $\chi^2[2, 269] = 9.7, p < .05$). One cultural difference was found across these five emotions: More Japanese than American subjects believed that no action was necessary. This finding is consistent with the findings above concerning attribution of responsibility for the event: If one is reluctant to make an attribution of responsibility, or attributes responsibility to other forces, then one's coping ability is limited, and is reflected in the belief that no action would be necessary.

Some emotion-specific findings were also obtained: For fear, more American subjects believed they could do something to influence the situation positively; for anger and disgust, more American subjects believed they were powerless and dominated by the event and its consequences; and for shame and guilt, more Japanese subjects pretended that nothing had happened and tried to think of something else.

NONVERBAL AND VERBAL REACTIONS

The number of bodily symptoms, expressive reactions, and verbal reactions checked by the subjects was summed for each emotion. A 2×7 ANOVA was then computed for each of these sum scores separately.

Bodily symptoms. The main effects for both emotion ($F[6, 1904] = 65.0, p < .001$) and culture ($F[1, 1904] = 129.7, p < .001$) were highly significant. The culture main effect indicated that American subjects generally reported more bodily symptoms of the emotions than did the Japanese subjects. Newman-Keuls analysis on the emotion means collapsed across culture produced the following order: fear > sad = shame = anger = joy > guilt = disgust. These findings indicate that both cultures agreed about which emotions produced the most bodily symptoms, with fear producing the most symptoms and guilt and disgust the least.

Expressive reactions. Again, the main effects for both emotion ($F[6, 1904] = 22.9, p < .001$) and culture ($F[1, 1904] = 101.2, p < .001$) were highly significant. The culture main effect suggested that American subjects in general reported more expressive reactions to the emotions than did the Japanese subjects. Newman-Keuls analysis on the emotion means collapsed across culture produced the following order: joy = anger > fear = sad = disgust > shame > guilt. These data suggest that both cultures agreed that joy and anger produced the most expressive reactions, and shame and guilt the least.

Verbalization. The main effects for both emotion ($F[6, 1904] = 10.1, p < .001$) and culture ($F[1, 1904] = 7.6, p < .001$) were significant. The culture main effect suggested again that American subjects reported slightly more verbal reactions to the emotions than did the Japanese subjects. Newman-Keuls analysis produced the following order: anger > joy = fear = sad = disgust = shame > guilt. These data indicate that both cultures agreed that anger produced the most verbal responses, and guilt the least.

DISCUSSION

DIFFERENCES AMONG THE EMOTIONS

Emotions were differentiated by all aspects of experience we assessed. With regard to the ecology of emotion, emotions were distinguished by the frequency of report: Disgust was most frequently reported, and fear and sadness were least frequent. By duration of experience, joy and sadness were experienced the longest, and fear, shame, and disgust the shortest. By intensity of experience, sadness, joy, anger, and fear produced the most intense experiences, guilt and shame the least intense.

Emotions were also distinguished by (a) degree of regulation and control—sadness, shame, and guilt required greater degrees of social control, joy the least; (b) physiological reactions—fear produced the most bodily symptoms, guilt and disgust the least; (c) expressive reactions—joy and anger produced the most expressive reactions, guilt the least; and (d) verbalizations—anger produced the most verbal responses, guilt the least.

Finally, emotions were distinguished by the subjects' subjective evaluation of the antecedent situations, attributions of responsibility, and possible coping strategies: Joy-eliciting situations were the most expected, and were evaluated to be the most pleasant; joy-eliciting experiences also facilitated goals and produced more positive evaluations of self-esteem and changes in relationships than did the other emotions. Anger situations were perceived as the most unfair, and anger and guilt situations resulted from more improper or immoral behavior.

These data strongly suggest that the evaluation of and reactions to emotion antecedents are universal. While emotion effects were strong and consistent across all aspects of the emotion process assessed, however, an extreme biological viewpoint arguing for innate affect programs is premature, since the origin of these cross-cultural similarities cannot be pinpointed by these data. While an

innate affect program may indeed be the source of these similarities in evaluation, an equally tenable position would be that the emotions themselves are similar in nature, and thus facilitate similar learning experiences across cultures. In this case, the emotions themselves may be related to an innate affect program (and evidence of this is certainly found in the facial expression studies; see Ekman, 1982); the subjective evaluation of their antecedent situations, however, may result from a culturally similar learning process.

While this article focused only on data from two cultures (albeit two cultures traditionally considered quite discrepant), data from the larger project incorporating findings from 27 countries also indicate universal agreement concerning the subjective evaluation of emotion-antecedent situations. These findings in general support Scherer's (1984a, 1984b) component process model of emotion, in which emotion elicitation occurs as a result of differential outcomes of a number of stimulus evaluation checks. Joy-producing events, for example, are predicted to be expected, pleasant, conducive to goals, and fair; the data support each of these predictions. The data for anger also support this model. The data for the other emotions, however, are less clear, in large part because the response alternatives available to the subjects did not allow for exact tests of the stimulus evaluation outcomes as predicted in the component process model (see Scherer, 1984a, 1984b). Future studies testing the component process model of emotion need to be sensitive to the response alternatives given subjects in relation to the outcomes predicted by the model, and also to more careful assessments of the reliability and validity of the questionnaire approach and the particular responses in testing the model. With the proper methodological rigor, findings concerning the component process model of emotion may allow researchers and theorists to incorporate innate emotion programs, setting the stage for cultural constants for emotion, with cultural and individual learning processes, to account for similarities and differences in subjective evaluations of emotion situations.

DIFFERENCES BETWEEN CULTURES

Cultural differences were also evident, although the effect sizes were small, and the differences that were found reflected differences in degree rather than direction. In general, cultural differences were found in (a) the ecology of emotion—American subjects experienced their emotions for longer periods of time and with greater intensity than Japanese subjects; (b) the subjects' reactions to the emotion-eliciting situations—American subjects reported more physiological, expressive, and verbal reactions to the emotional situations than did the Japanese; and (c) the situations' effects on self-esteem—American subjects reported more positive effects to their self-esteem as a result of the emotional experiences than did the Japanese subjects.

These cultural differences appear to be concerned primarily with the experiential and reactive aspects of the emotions, rather than with the evaluation of antecedent situations. For example, American subjects were found to experience the emotions for longer durations and with greater intensity than the Japanese subjects, and they reported more physiological, verbal, and nonverbal reactions. These data appear to support the stereotypical notions of Japanese as "inscrutable," as our Japanese subjects tended to mute or attenuate their observable emotional reactions.

It is interesting to note, however, that there were no cultural differences found on the conscious regulation or control of emotion; thus cultural differences in the actual physiological, verbal, and nonverbal reactions appear to occur in the absence of active cognitive mediation or realization on the part of the subjects. One explanation for this could be that the regulation process is learned so early and so well that by the time we assess it in our college student sample, it occurs automatically, depending on the emotion and the social situation. These findings may have important implications for our knowledge concerning child-rearing practices and the socialization of emotion.

Related to these cultural differences is the concept called *display rules*, culture-specific rules that manage or modify emotional behavior in social settings (Ekman, 1972). The display rule effect, however, was documented only for the management of facial expressions as reactions to negative stimuli in male college students in the presence of an older (and presumably higher-status) male experimenter. Our present data suggest that the parameters of the display rule effect are actually much larger than that. Future behavioral research can address where these parameters and boundaries begin and end, both in terms of the social situations and in terms of the emotion and the channel of expression. Cross-cultural research on emotion, focused on differences in perception and expression of facial expressions of emotion in the past, can now turn some of its attention to other aspects of the emotion process that may be universal, such as regulation and control, physiological and verbal reactions, and antecedent situations. These findings can be used to provide more detailed hypotheses concerning cultural differences and universals in emotional processes, and also to provide the model by which these hypotheses can be tested.

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