

Previous cross-cultural research on the emotions have operationalized culture by country. This article suggests that the use of stable and meaningful dimensions of cultural variability, such as those offered by Hofstede (1980), may be useful in studies on emotion. To illustrate their potential usefulness, cultural differences in previous judgment studies of universal facial expressions were reanalyzed, using Hofstede's (1980, 1983) dimensions. The results indicated that meaningful dimensions of cultural variability can be a potentially useful theoretical and empirical construct in future cross-cultural research on the emotions.

CULTURAL INFLUENCES ON THE PERCEPTION OF EMOTION

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Two decades of cross-cultural research on facial expressions has documented universal consensus in judgments of anger, disgust, fear, happiness, sadness, and surprise (Ekman, 1972; Ekman & Friesen, 1971; Ekman, Friesen, & Ellsworth, 1972; Ekman, Sorenson, & Friesen, 1969; Izard, 1971). Findings from newer studies, however, indicate that cultures also *differ* in their judgments, particularly when rating intensity. For example, Ekman et al. (1987) reported that when observers of different cultures rated the intensity of each of the universal expressions, the cultures disagreed on the absolute intensity levels attributed to the expressions. In a subsequent study, Matsumoto and Ekman (in press) reported that these differences were not due to the cultural backgrounds of the posers of each of the expressions, nor to differences in the affect lexicons of the cultures tested.

The recent findings suggesting cultural differences in the perception of emotion point to the necessity of conceptualizing culture

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in terms of stable, meaningful dimensions to account for such differences. Unfortunately, until now all cross-cultural research on the emotions has operationalized culture by country, which restricts the interpretation of cultural differences, when found, to anecdotal or impressionistic statements. In the study of emotion, the use of a small set of meaningful dimensions along which cultures vary may give us important clues to cultural differences.

On the basis of a large-scale value survey, Hofstede (1980, 1983) has offered four dimensions of cultural variation that may be applicable to studies of emotion: *power distance*, *uncertainty avoidance*, *individualism*, and *masculinity*. Power distance reflects the way in which interpersonal relationships form and develop when differences in power are perceived. Uncertainty avoidance reflects the degree to which people in a culture feel threatened by ambiguous situations and have created beliefs and institutions to avoid them. Individualism is a major dimension of cultural variability postulated by other theorists as well (Kluckhohn & Strodtbeck, 1961; Marsella, DeVos, & Hsu, 1985; Parsons & Shills, 1951; Triandis, 1986). Individualistic cultures emphasize individual goals and independence, while collectivistic cultures stress collective goals and dependence on groups. Masculinity reflects the degree to which cultures delineate sex roles, with masculine cultures making clearer differentiations between genders.

Hofstede (1980, 1983) asserts that, in practice, power distance and individualism are highly correlated negatively. Thus those cultures typically scoring high on one dimension usually score low on the other, and vice versa. But Hofstede (1980, 1983) chooses to keep these two dimensions separate, at least on a theoretical level, since they refer to two different conceptual constructs. Thus, for the purposes of this article, it seems most appropriate to adopt Hofstede's recommendations concerning the treatment of these two dimensions, until data and theory suggest otherwise.

One attempt has already been made to account for cultural differences with respect to emotion antecedents and reactions (Gudykunst & Ting-Toomey, in press), using data originally reported in Scherer, Wallbott, and Summerfield (1986). Eight cultures

were coded in terms of Hofstede's dimensions, and these were correlated with the percent of respondents from each culture giving the three most frequent antecedents for the four emotions surveyed. Several significant correlations were found, each of which showed the potential utility of Hofstede's (1980, 1983) dimensions in the study of emotion antecedents. For example, power distance was negatively correlated with injustice as an antecedent to anger. In high power distance cultures, inequality and injustice are expected and taken for granted, while they are not expected or acceptable in low power distance cultures. Thus a negative correlation would be predicted between power distance and injustice as an antecedent to anger.

Hofstede's (1980, 1983) dimensions can also be used to generate specific hypotheses with respect to cultural differences in the perception of facial expressions. For instance, power distance can be expected to be negatively correlated with the perception of negative emotions. Cultures high on power distance establish social order by emphasizing differences in power between individuals. These cultures, therefore, tend to be hierarchical, emphasizing status, vertical relationships, and the importance of groups to which one belongs. In these cultures, the communication of negative emotions, particularly in social situations, may be attenuated, as the expression and perception of these emotions may be viewed as threatening to the existing social order. Cultures low on power distance, however, emphasize individual equality across different social roles. In these cultures, the communication of negative emotions may be more tolerated.

Individualism can be expected to relate to emotion in several ways. First, it may be hypothesized that individualism is correlated positively with negative emotions. Cultures high on individualism emphasize individual uniqueness over groups. The communication of negative emotions will not be frowned upon, and may even be encouraged, as the expression and perception of these emotions will be attributed to individual differences.

Individualism may also affect the degree to which individual variation is observed in judgments of emotion. Cultures high on individualism may produce larger variations in their judgments of the emotions, as these cultures encourage individual variation. Cultures low on individualism, on the other hand, may produce a more restricted range of judgments, as individual variation is frowned upon in favor of groups and collectivity.

As uncertainty avoidance is associated with anxiety concerning the unknown, we hypothesize that it may be particularly relevant to judgments of fear. Cultures high on uncertainty avoidance experience higher anxiety and stress, as the uncertainty inherent in life is felt as a continuous threat. These cultures tend to form institutions and social networks designed to deal with fear. Thus they may tend not to recognize this emotion, or attenuate attributions of intensity when expressed or perceived.

Finally, cultural differences on masculinity may contribute to gender differences with respect to emotion. Gender differences in both the expression and the perception of emotion can be expected in cultures high on masculinity, as these cultures tend to make clearer delineations between the genders. These differences may be especially prominent for negative emotions such as anger, as the expression and perception of these may be sanctioned for one sex but not the other.

This study was designed to examine the utility of stable and meaningful dimensions of cultural variability in the study of emotion. Data from previous cross-cultural research, involving both categorical and intensity judgments of universal facial expressions, were used. Cultures were coded using Hofstede's (1983) dimensions of cultural variation. These dimensions were then correlated with three different types of data concerning judgments of facial expressions: (a) the percent of members of each culture correctly identifying the emotional expression, (b) the mean intensity level attributed to each of the expressions, and (c) the amount of variability associated with the intensity ratings of each expression.

METHOD

SELECTION OF THE CULTURES

Cultures were selected for inclusion in this study if (a) they were part of a study comparing members of different cultures in their judgments of the same set of facial stimuli, (b) data concerning judgments either of which emotion is expressed or of emotion intensity were available, and (c) data regarding the culture's placement along each of Hofstede's four dimensions of cultural variability were available. These criteria allowed for the inclusion of 15 different cultures from four studies (Dickey & Knowler, 1941; Ekman & Friesen, 1969; Ekman et al., 1987; Izard, 1969) reporting data concerning judgments of which emotion is expressed. Also, seven different cultures from a single study (Ekman et al., 1987) reporting data concerning judgments of emotion intensity met the criteria for inclusion (Table 1).

CODING OF THE DATA

Judgments of which emotion. For each of the 15 cultures that met the criteria for inclusion, a composite percent score was coded for each of the six emotions. This composite was calculated by averaging the percent of judges correctly identifying each of the six emotions across all photographs of the same emotion within each study. When a culture was included in more than one study, the score used was the composite score across studies, calculated by averaging the individual composite scores for each study.

Judgments of emotion intensity and variability in rating. Because the intensity data used in this study came from a single study (Ekman et al., 1987), the means and standard deviations for the three individual photographs for each of six emotions were used. A composite mean intensity score was computed by averaging the mean intensity ratings for each of the six emotions across all photos of the same emotion. In order to obtain an estimate of the variability

TABLE 1
List of Cultures Used in This Study, and Their Rank and Raw Scores on Each of Hofstede's Dimensions

COUNTRY	Power Distance		Uncertainty Avoidance		Individualism		Masculinity	
	Rank	Raw	Rank	Raw	Rank	Raw	Rank	Raw
ARGENTINA	49.00	18.50	86.00	38.50	46.00	28.50	56.00	30.50
BRAZIL	69.00	39.00	76.00	29.50	38.00	25.00	49.00	25.00
CHILE	63.00	29.50	86.00	38.50	23.00	15.00	28.00	8.00
ENGLAND	35.00	11.00	35.00	6.50	89.00	48.00	66.00	41.50
FRANCE	68.00	37.50	86.00	38.50	71.00	40.50	43.00	17.50
GERMANY	35.00	11.00	65.00	23.00	67.00	36.00	66.00	41.50
GREECE	60.00	26.50	112.00	50.00	35.00	22.00	57.00	32.50
HONG KONG	68.00	37.50	29.00	4.50	25.00	16.00	57.00	32.50
ITALY	50.00	20.00	75.00	28.00	76.00	44.00	70.00	46.50
JAPAN	54.00	21.00	92.00	44.00	46.00	28.50	95.00	50.00
MEXICO	81.00	45.50	82.00	33.00	30.00	20.00	69.00	45.00
SWEDEN	31.00	6.50	29.00	4.50	71.00	40.50	5.00	1.00
SWITZERLAND	34.00	9.00	58.00	19.00	68.00	37.00	70.00	46.50
TURKEY	66.00	34.50	85.00	34.50	37.00	24.00	45.00	20.50
USA	40.00	16.00	46.00	11.00	91.00	50.00	62.00	36.00

in these ratings for each of the cultures, a composite standard deviation was also computed in the same manner.

Dimensions of cultural variability. Each of the cultures were coded two different ways using Hofstede's (1983) four dimensions of cultural variability. One way allowed for coding of the actual scaler values for each culture associated with each of the four dimensions; the second allowed for coding of the rank of each culture (1 through 50) associated with the scaler value for each of the four dimensions, relative to the other cultures in the original study (Table 1).

RESULTS

In order to examine the effects of cultures on the perception of emotion, Pearson product-moment correlations and Spearman rank-order coefficients were computed between the two indexes of three of the four cultural dimensions and each of the emotion variables. The masculinity dimension was dropped from the analyses, since an adequate test of the hypotheses concerning this dimension would involve the testing of sex differences for each culture, and examining how the degree of sex difference relates to masculinity as a culture-level concept. All significant correlations reported for the remaining three dimensions were also significant using the rank value for each of the dimensions, and with the rank-order coefficients using the same variables. All significance tests are two-tailed.

POWER DISTANCE

It was hypothesized that power distance would be negatively correlated with the perception of negative emotions. The findings indicated support for judgments of intensity, but not for the correct identification of the negative emotions: Power distance was not correlated with the percent of observers identifying the negative emotions, but was negatively correlated with the intensity ratings of anger, fear, and sadness. Thus it appears that the culture-level effects of power distance may be restricted to judgments of emotion intensity only, rather than judgments of which emotion is portrayed in the face.

Power distance was also negatively correlated with the percent of observers correctly identifying happiness, and with the variability index of fear. These findings were not predicted.

INDIVIDUALISM

We predicted that individualism would be positively correlated with the perception of negative emotions. Findings indicated sup-

TABLE 2
Correlations Between Dimensions of Cultural Variability
and Emotion Data

	Power	Uncertainty	
	Distance	Avoidance	Individualism
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<u>with Percent of Observers</u>			
<u>Correctly Identifying the Emotion (N=15)</u>			
Anger	.067	-.059	.094
Disgust	-.144	.087	.028
Fear	.105	-.184	-.145
Happiness	-.364*	-.338	.510**
Sadness	.208	.037	-.497**
Surprise	-.045	.208	-.257
<hr/>			
<u>with Composite Intensity Ratings (N=7)</u>			
Anger	-.634*	.204	.669**
Disgust	.054	-.136	.235
Fear	-.707**	-.177	.786**
Happiness	-.063	.456	.133
Sadness	-.631*	-.411	.486
Surprise	-.339	.496	.439
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<u>with Composite Standard Deviations (N=7)</u>			
Anger	.467	.538	-.479
Disgust	-.029	.199	.120
Fear	.737**	.089	-.776**
Happiness	.295	.132	-.403
Sadness	.374	.723**	-.270
Surprise	-.135	.500	-.029

*p < .01 **p < .05

port for this hypothesis for judgments of intensity, as this dimension was positively correlated with ratings of anger and fear; ratings of sadness approached, but did not attain, statistical significance ($p = .14$). The hypothesis was not supported, however, for the percent data. In fact, individualism was positively correlated with the percent of observers identifying happiness, and negatively with sadness. These latter two findings were not predicted.

We also predicted that individualism would be positively correlated with the variability index of perception. This hypothesis was not supported, as most of the correlations were negative, with one (fear) reaching statistical significance.

UNCERTAINTY AVOIDANCE

Finally, we hypothesized that uncertainty avoidance would be associated with judgments of fear expressions. This hypothesis was not supported, as only one correlation out of the 18 computed using this dimension reached statistical significance. This correlation, for variability in intensity judgments of sadness, was not predicted.

As 10 out of the 36 correlations computed for power distance and individualism were statistically significant, it is unlikely that these correlations can be attributed to Type I error. The one significant correlation for uncertainty avoidance, however, may be uninterpretable, since the possibility of Type I error in this case cannot be ruled out.

DISCUSSION

These results suggest the promise of the inclusion of stable and meaningful dimensions of cultural variability, such as Hofstede's (1980, 1983), in the study of emotion. Cultural differences along dimensions of power distance and individualism provided clear and interpretable correlations with several types of judgments. But, while we predicted that uncertainty avoidance would particularly affect judgments of fear, this hypothesis was not supported.

The correlations between power distance and individualism with the intensity ratings of anger, fear, and sadness indicate the effects of these cultural dimensions on these emotions. Cultures high in power distance and low in individualism stress hierarchy and group cohesion ("collectivity"), while individuality is minimized. In these cultures, the communication of negative emotions threatens group solidarity and interpersonal social structure. On the other hand, cultures low in power distance and high in individualism may sanction the communication of these emotions more, as they relate to individual freedom to express and perceive negative emotions. As such, they do not threaten social structures and groups to the extent found in high power distance, low individualism cultures.

Ekman and Friesen (Ekman, 1972; Friesen, 1972) coined the term *display rules* to account for these types of differences in the *expression* of negative emotion between Japanese and Americans. These rules are culture-level phenomena that are learned through socialization. It appears that a similar culture-level phenomenon may govern the *perception* of negative emotions as well. These phenomena, not unlike Buck's (1984) "decoding rules," are most likely learned through socialization, in much the same ways as display rules. Unfortunately, no study has examined the relationship between cultural or individual differences in expression and perception. Indirect evidence for this association, however, comes from Matsumoto and Ekman's (in press) study, which reports American-Japanese cultural differences in the perception of emotion intensity that are consistent with cultural differences in the display rules of these two cultures.

Why power distance and individualism were correlated for anger, fear, and sadness, but not for disgust, is problematic to interpret. Future studies examining within-culture differences among these emotions, both in expression and in perception, may elucidate on these differences. It is interesting to note that in Matsumoto and Ekman's (in press) study of American-Japanese differences in the perception of emotion intensity, strong and consistent cultural differences were found for all emotions included *except* disgust. Perhaps disgust provides different findings than the

other three negative emotions because of differences in the interpersonal natures of these emotions. As anger, fear, and sadness are emotions that are often elicited in interpersonal situations (see Matsumoto & Kudoh, in press; Scherer, Matsumoto, Wallbott, & Kudoh, 1988), these emotions may be particularly influenced by cultural dimensions that pertain to social structure. While disgust itself can certainly contain elements of an interpersonal nature (e.g., feeling disgusted with someone), the universal expression of disgust typically used is probably perceived as a reaction without interpersonal context (e.g., a disgusting odor, taste). These, however, remain speculations concerning the nature of these emotions.

Power distance and individualism also correlated with the percent of observers correctly identifying happiness and sadness. But these dimensions were not correlated with anger, disgust, or fear, as predicted. As the significant correlations that were obtained were not hypothesized, it is best for these findings to be replicated before hypotheses concerning their basis are posited.

The hypothesis that uncertainty avoidance would be associated with judgments of fear was not supported. This finding could be related to the type of fear dictated by this cultural dimension. Uncertainty avoidance reflects the degree of fear or anxiety to the unknown, such as the future or death. Cultures high in uncertainty avoidance typically have developed elaborate structures or rituals to compensate for the increased anxiety. Fear as expressed in the universal emotions, however, is devoid of this type of context. In fact, the fear expression used in previous cross-cultural research may actually imply a different context, one which dictates an element of surprise. Previous findings indicating that fear is often mistaken for surprise support this notion (see Ekman, 1972).

We also hypothesized that individualism would be correlated with the degree of variability associated with judgments of emotion. This hypothesis was not supported, and is surprising. Moreover, just as many correlations were significant using this dimension, as compared to the other dimensions. These findings suggest that individualism as a culture-level phenomenon may not impact on emotion perception in terms of within-culture range. Rather, this

dimension most likely influences the recognition of emotion and attributions of intensity. The nonsignificant correlations indicate that the socialization processes that produce cultural differences in individualism may have the same degree of variation across cultures, at least concerning their effects on the perception of emotion intensity.

There are limitations to this study. For example, the small sample size, particularly in analyzing the intensity ratings, makes it difficult to generalize to a wide variety of cultures. But, given the wide range of cultural variation scores, and the fact that significant product moment correlations were also significant when computed separately according to photo rank scores, or when using rank-order correlations, we can safely conclude that the correlations we report are not spurious.

On the other hand, the fact that cultural scores were assigned to cultures, and that the culture scores were generated from another sample of subjects, makes the obtained correlations quite impressive. In assigning dimension scores to the cultures, there is the assumption that they are accurate representations of the cultural dimensions in the subjects giving the judgments of the expressions. The fact that culture scores were assigned, and significant correlations were obtained using these assigned scores, suggests the strength of this approach. Procedures that entail the collection of scores of cultural variability from the same individuals giving the judgments of facial expressions may produce even stronger effects, as within- and between-culture differences in the judgments can be related to differences in the dimensions of cultural variability in the same individuals.

Despite these limitations, the findings from the present study give ample evidence that the use of stable dimensions of cultural variability offers an operationalization of culture that can be meaningfully applied to both theory and data. Future research on the perception of facial expression using individual measures of cultural variability will substantially advance our knowledge of the ways cultures influence emotion.

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