

American-Japanese Cultural Differences in Intensity Ratings of Facial Expressions of Emotion¹

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Findings from a recent study by Ekman et al. (1987) provided evidence for cultural disagreement about the intensity ratings of universal facial expressions of emotion. We conducted a study that examined the basis of these cultural differences. Japanese and American subjects made two separate intensity ratings of Japanese and Caucasian posers portraying anger, disgust, fear, happiness, sadness, and surprise. The Americans had higher mean intensity ratings than the Japanese for all emotions except disgust, regardless of the culture or gender of the poser. Americans gave happy and angry photos the highest intensity ratings, while Japanese gave disgust photos the highest ratings. But there was considerable cross-cultural consistency in the relative differences among photos.

The evidence for universals in facial expressions of emotion comes from two types of research. In one type, observers in both literate cultures (Ekman & Friesen, 1969; Ekman, Friesen, & Ellsworth 1972; Izard, 1971) and preliterate cultures (Ekman, Sorenson, & Friesen, 1969; Ekman & Frie-

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sen, 1971) viewed different facial expressions of emotion, and agreed in their judgments about *which* emotion was shown in the faces. More recently, Ekman *et al.* (1987) found agreement across cultures also about the judgment of the *relative intensity* of two expressions of the same emotion.

The second type of research examined the expression rather than the perception of emotion. For example, Ekman and Friesen (Ekman, 1972) found that members of a preliterate culture showed the same facial movements when posing emotions as is seen in many other cultures. In a study of spontaneous behavior, Ekman (1972) found that Japanese and American subjects showed the same facial expressions when viewing stress inducing films, when the subjects were in a condition in which they thought they were unobserved.

Some cultural differences have also been obtained, in relation to both the perception and the expression of emotion. In the study that examined the facial reactions of Japanese and Americans when viewing stress films, the Japanese more than the Americans masked their negative expressions when the subjects watched the stress films in the presence of a high status scientist from their own culture (Friesen, 1972). Ekman and Friesen (1969) had predicted these findings based on their concept of "display rules": learned, culture-specific rules governing the management and control of emotional expression in specific social contexts.

Cultural differences in the *perception* of facial expressions were also found in the recent study by Ekman *et al.* (1987). Although there was cross-cultural agreement about the relative intensity of two expressions of the same emotion, there were differences across cultures in the absolute intensity level attributed to some of the expressions. Post hoc analyses indicated that the cultures who could clearly discern they were making judgments of a foreigner (Japan, Hong Kong, Indonesia; only Caucasian posers used) gave significantly lower intensity ratings than other cultures in their judgments of happiness, surprise, and fear.

Ekman *et al.* (1987) speculated that perhaps the intensity differences reflected greater uncertainty or politeness on the part of those who had to judge expressions shown by people who were clearly not part of their own culture. Because all the faces judged in their experiment were of Caucasians, the non-Western observers always knew they were judging foreigners and may have attenuated their intensity ratings because of the uncertainty of judging others. By this logic, the Japanese might have judged Japanese faces to be more intense if they had seen any.

Ekman and Friesen's concept of display rules suggests another explanation. These rules were used to explain why Japanese would attenuate their expressions of emotion in a social situation, compared to Americans. Similar rules, much like Buck's (1964) decoding rules, may exist concerning the

perception of emotion. Display rules in Japan not only may attenuate their expressions of emotion, but may similarly downplay how emotional anyone else is seen to be. By this reasoning, the Japanese will perceive less intense emotion than Americans, regardless of whether the person judged is Japanese or Caucasian.

The manner in which the intensity judgments were obtained allowed another explanation. Ekman *et al.* (1987) asked their observers to rate the intensity of each of seven emotional states (anger, contempt, disgust, fear, happiness, sadness, and surprise). Differences, however, in the intensity levels implied by the translations of the different emotion terms may have produced the cultural differences in intensity ratings. Suppose, for example, the translation of the English word anger into Japanese inadvertently yielded a word which implied a higher level of anger than it did in English. When asked to rate the intensity of this anger term, the Japanese observers would have produced lower intensity ratings even if they did not differ from Americans in their actual perception of absolute intensity.

Our study was designed to test these hypotheses concerning the basis of cultural differences in judgments of intensity of the universal emotions. In our study, American and Japanese observers viewed facial expressions of emotion portrayed by both Caucasian and Japanese posers and made two separate judgments. The first judgment was the same multiscale intensity judgment used in Ekman and co-workers' (1987) study. If the cultural differences in intensity levels occurred because of politeness or uncertainty in judging foreigners, then one would predict that the Japanese would give higher ratings to Japanese faces than Caucasian. Alternatively, if the cultural differences are due to learned rules, one would predict that the Americans would give higher intensity ratings than the Japanese regardless of the culture or gender of the person being judged.

The second judgment obtained from the subjects was an anchorless intensity rating made without referent to emotion labels. If the cultural differences were due to the way in which emotion terms were used as part of the response alternatives, one would predict that the cultural differences would not survive when these ratings were made. If the emotion labels have nothing to do with the observed differences, however, one would expect the differences to replicate with these ratings.

Because we presented observers with an equal number of male and female Caucasian and Japanese posers in each emotion, we were also able to extend Ekman and co-workers' (1987) findings by testing hypotheses concerning differences among the emotions. If people of both cultures learn to perceive the intensity of the different emotions relative to one another similarly, one would expect to find that the Americans and Japanese give the highest and lowest intensity ratings to the same emotions. Culture-specific

differences in the interpretation of the emotions, however, would produce a different ordering of the emotions for the Americans and Japanese, in terms of the intensity levels attributed to each of the emotions.

Finally, we were able to conduct more refined tests of the universality of relative intensity differences between photos. In our study, observers viewed four different types of posers (male and female Caucasians and Japanese) of anger, disgust, fear, happiness, sadness, and surprise. If the relative intensity differences among photos are universal, one would expect to find that the ordering of the poser types within each emotion in terms of the intensity attributed to them would be the same for Americans and Japanese. If the ordering were not the same, this would suggest that relative intensity differences among photos are not universal.

METHOD

Observers

The American sample included 124 (80 male, 44 female) US-born college students recruited from the University of California, Berkeley, excluding those of Japanese, Chinese, or Korean ancestry. The Japanese sample included 110 (55 male, 55 female) Japanese college students recruited from the Osaka University of Education, Osaka, Japan. All observers participated in partial fulfillment of class requirements.

Facial Stimuli

There existed no set of pictures of facial expressions shown by members of two cultures, which had been verified to display at least four or five emotions, upon which we could draw. Instead, we had to undertake to produce such a set. A large number of Caucasian and Japanese posers were individually requested to perform the facial muscle movements associated with the prototypic full face expressions of anger, disgust, fear, happiness, sadness, and surprise (cf. Ekman & Friesen, 1975), while a photograph was taken of their attempt. All the Caucasians were US-born Americans; the Japanese included both US-born Japanese-Americans and Japanese nationals studying in the United States.

This pool of photos was scored by two coders using Ekman and Friesen's (1978) Facial Action Coding System (FACS). Reliability was .91 (calculated by doubling the number of times the coders agreed on the classification of a muscle action and dividing that by the total number of codes given

by both coders). Photos were considered for inclusion if the following criteria were met: (a) the muscle movements and their intensity levels coded by FACS matched exactly that which was originally requested for each of the emotions, with no extraneous muscle movements; and (b) the overall intensity of the facial muscle innervation across different posers of the same emotion was relatively constant and of moderate to high intensity. The final set included 48 different faces, consisting of 8 each (2 males and 2 females of 2 cultures) of anger, disgust, fear, happiness, sadness, and surprise. Each poser appeared only once in the entire set.

Judgment Tasks

Observers made two different types of judgments on two separate viewings. In the first judgment task, the observers used a 9-point scale to rate the intensity of each of seven emotions (anger, contempt, disgust, fear, happiness, sadness, and surprise) in terms of whether it was absent (0) or present and, if present, to indicate its strength from slight (1) through moderate (4) to strong (8). The seven emotion terms were always presented in the same order, alphabetically.

In the second judgment task, observers used a 9-point scale to rate the overall intensity of the expression, without mentioning any specific emotion terms. The scale values were labeled neutral (0), weak (1), moderate (4), and strong (8).

Translation accuracy from the English to the Japanese of both the instructions and the emotion terms was verified using a back-translation procedure. Translation was first made from the original English to Japanese and then translated back into English by an independent translator. The Japanese translation used in this study was that which back-translated exactly into the original English.

Procedure

The procedures and instructions were the same in Japan as in the United States. All individuals were tested in group sessions and viewed the 40 stimuli twice. On the first viewing, subjects were instructed to complete the first multiscale judgment on each of the seven emotion categories. The stimuli were presented for 10 sec each, and in an entirely random order; no consideration was given to emotion, culture, or gender in determining the presentation order. When subjects completed their ratings of all the photos, they viewed the stimuli a second time. The stimuli were presented in the same random order. On this pass, they were instructed to complete the in-

tensity ratings of the overall strength of the expression, without the use of emotion labels.

RESULTS

Analysis of the Most Salient Emotion

Before testing hypotheses concerning cultural differences on the intensity ratings, it was imperative to ascertain whether there was cross-cultural agreement about which emotion was depicted in each expression. The percentage of observers giving the target emotion scale the highest rating was calculated separately for each photo. The target emotion was the emotion term that corresponded to that intended in the photo (e.g., anger for the anger photos). Both American and Japanese judges perceived the intended emotion in all photos of anger, disgust, happiness, sadness, and surprise at a degree comparable to that usually found in previous judgment studies (percentages averaged across all eight photos/emotion were 87.12, 78.48, 97.97, 94.52, and 94.43 for the Americans and 69.64, 68.22, 97.59, 77.13, and 88.02 for the Japanese, respectively). The percentages for American judgments of fear photos was also comparable (71.12%), but the rate for the Japanese was unusually low (30.82%), as they often called these photos surprise (50.35%). Because the Japanese percentage was not comparable to that usually found for universal expressions, the judgments of the fear expressions were dropped from subsequent analyses.

All analyses were computed twice, once using the data including all subjects and the second time using the data only from those subjects who gave the intended emotion term the highest intensity rating. All of the findings reported below were exactly the same; thus we present the analyses using the entire sample.

Data Reduction and Overall Analyses

Each subject's ratings were averaged across both examples of the Caucasian male, Caucasian female, Japanese male, and Japanese female photos. A five-way analysis of variance (ANOVA) computed on these scores, using judge culture (2), judge gender (2), poser culture (2), poser gender (2), and emotion (5) as the independent variables, produced a variety of findings (Table I). Of special importance to the hypotheses of this study was the judge culture \times poser culture \times poser gender \times emotion interaction [$F(4,900) = 4.06, p < .01$], which allowed us to partition the factors into the following three major analyses. Judge gender was dropped from the re-

Table I. Results of Five-Way Analysis of Variance

Effect	df	F	p
Judge culture (A)	1,225	82.14	< .001
Judge gender (B)	1,225	.35	ns
Poser culture (C)	1,225	25.06	< .01
Poser gender (D)	1,225	.00	ns
Emotion (E)	4,900	237.00	< .001
A × B	1,225	10.58	< .01
A × C	1,225	8.87	< .01
A × D	1,225	1.44	ns
A × E	4,900	23.50	< .001
B × C	1,225	1.60	ns
B × D	1,225	.18	ns
B × E	4,900	1.59	ns
C × D	1,225	31.76	< .001
C × E	4,900	58.29	< .001
D × E	4,900	132.12	< .001
A × B × C	1,225	2.58	ns
A × B × D	1,225	3.17	< .10
A × B × E	4,900	1.73	ns
A × C × D	1,225	13.53	< .001
A × C × E	4,900	13.12	< .001
A × D × E	4,900	3.88	< .01
B × C × D	1,225	.03	ns
B × C × E	4,900	.11	ns
B × D × E	4,900	.89	ns
C × D × E	4,900	81.78	< .001
A × B × C × D	1,225	.48	ns
A × B × C × E	4,900	4.77	< .001
A × B × D × E	4,900	1.81	ns
A × C × D × E	4,900	4.06	< .01
B × C × D × E	4,900	1.37	ns
A × B × C × D × E	4,900	.63	ns

maining analyses, as there were only two (unpredicted) effects involving it as a factor.

Cultural Differences in Absolute Intensity Ratings

A one-way ANOVA, using judge culture as the independent variable, was computed separately for each of the five emotions and four poser types (Table II).³ For all emotions and poser types except disgust, the Americans

³The error term used in these analyses was the between subjects error term from the overall five-way analyses.

Table II. Intensity Ratings of Japanese and Caucasian Posers by Japanese and American Judges

	US	Japan	df	<i>F</i>	<i>p</i>
Anger					
Caucasian	7.37	6.62	1,231	36.01	< .001
Male	.71	1.18			
Caucasian	5.84	4.79	1,232	54.76	< .001
Female	.97	1.20			
Japanese	6.46	4.80	1,232	115.74	< .001
Male	1.02	1.33			
Japanese	5.90	4.72	1,232	54.52	< .001
Female	1.18	1.26			
Disgust					
Caucasian	5.92	6.22	1,232	2.91	< .10
Male	1.35	1.29			
Caucasian	6.19	5.85	1,231	4.85	< .05
Female	1.12	1.19			
Japanese	6.25	6.39	1,230	.89	ns
Male	1.04	1.26			
Japanese	5.68	5.90	1,232	1.53	ns
Female	1.25	1.46			
Happiness					
Caucasian	5.90	5.00	1,232	30.24	< .001
Male	1.21	1.30			
Caucasian	6.68	6.14	1,232	13.26	< .001
Female	1.07	1.20			
Japanese	6.63	6.05	1,231	16.64	< .001
Male	1.04	1.16			
Japanese	6.70	6.18	1,232	11.98	< .001
Female	.99	1.30			
Sadness					
Caucasian	4.41	3.82	1,232	13.97	< .001
Male	1.24	1.16			
Caucasian	4.91	4.16	1,232	17.10	< .001
Female	1.38	1.38			
Japanese	4.57	3.07	1,232	74.45	< .001
Male	1.38	1.26			
Japanese	4.89	3.75	1,231	37.66	< .001
Female	1.50	1.30			
Surprise					
Caucasian	5.83	4.50	1,232	54.21	< .001
Male	1.18	1.58			
Caucasian	5.34	4.25	1,231	39.32	< .001
Female	1.28	1.37			
Japanese	5.12	3.71	1,232	60.47	< .001
Male	1.28	1.49			
Japanese	5.76	4.73	1,232	45.75	< .001
Female	1.11	1.23			

had significantly higher intensity ratings than the Japanese, supporting the hypothesis that cultural differences are due to learned rules applied regardless of the culture or sex of the poser.

Each of the above analyses testing cultural differences in absolute intensity rating was computed a second time, using the anchorless intensity ratings from the second judgment task. The findings were identical to those presented above.

Intensity Differences as a Function of Poser Culture and Gender

A series of two-way ANOVAs using poser culture (2) and poser gender (2) as factors was computed, separately for American and Japanese judges and for each of the five emotions. For Americans, the poser culture \times poser gender interaction was significant on anger, disgust, happiness, and surprise [$F(1,121) = 79.04, 24.46, 27.77, 52.16; p < .001$, respectively]; the interaction for sadness was not [$F(1,121) = 1.21$; ns]. For the Japanese, this interaction was significant for anger, happiness, sadness, and surprise [$F(1,108) = 150.12, 38.70, 6.36, 45.76; p < .001$, respectively] but not for disgust [$F(1,108) = 1.21$, ns]. Because 8 of the 10 interactions were significant, poser culture and poser gender effects were analyzed by a series of simple effects comparisons (Keppel, 1982).

Poser Culture Effects. One-way ANOVAs were computed using poser culture (2) as the independent variable, separately for each judge culture, each emotion, and male and female posers (Table III). Japanese judges did not give Japanese faces higher ratings than Caucasian faces, and thus these data offer no support for the hypothesis that cultural differences are due to politeness or uncertainty in judging foreigners. The pattern was similar for American judges.

Poser Gender Effects. A similar series of ANOVAs was also computed using poser gender (2) as the independent variable (Table IV). Again, there was no consistent or predicted pattern of results for either the American or Japanese judges, but there was considerable consistency between the cultures.

Intensity Differences Among the Emotions

Each subject's ratings were averaged across all eight photos for each of the five emotions, and a one-way ANOVA was computed separately for each judge culture, using emotion (5) as the independent variable. The F 's were significant for both Americans and Japanese [$F(4,476) = 116.62, p < .001$, and $F(4,432) = 147.83, p < .001$, respectively]. For each, the emo-

Table III. Intensity Ratings as a Function of Poser Culture

Judge culture	Poser gender	Poser culture		df	F	p
		Caucasian	Japanese			
Anger						
American	Male	7.393 .678	6.467 1.028	1,121	148.41	< .001
Japanese	Male	6.618 1.179	4.800 1.329	1,109	270.81	< .001
American	Female	5.839 .968	5.899 1.177	1,123	.56	ns
Japanese	Female	4.786 1.205	4.723 1.259	1,109	.32	ns
Disgust						
American	Male	5.911 1.347	6.252 1.043	1,122	9.45	< .01
Japanese	Male	6.211 1.290	6.394 1.258	1,108	3.48	< .06
American	Female	6.187 1.117	5.683 1.252	1,122	22.53	< .001
Japanese	Female	5.855 1.185	5.900 1.455	1,109	.15	ns
Happiness						
American	Male	5.902 1.216	6.634 1.038	1,122	59.45	< .001
Japanese	Male	4.995 1.302	6.045 1.164	1,109	93.77	< .001
American	Female	6.677 1.075	6.698 .994	1,123	.06	ns
Japanese	Female	6.136 1.198	6.177 1.300	1,109	.16	ns
Sadness						
American	Male	4.411 1.238	4.569 1.384	1,123	1.93	ns
Japanese	Male	3.823 1.160	3.068 1.261	1,109	41.66	< .001
American	Female	4.915 1.384	4.886 1.504	1,122	.07	ns
Japanese	Female	4.164 1.382	3.750 1.299	1,109	12.91	< .001
Surprise						
American	Male	5.835 1.182	5.121 1.277	1,123	47.93	< .001
Japanese	Male	4.500 1.581	3.714 1.491	1,109	38.47	< .000
American	Female	5.341 1.279	5.752 1.111	1,122	14.83	< .001
Japanese	Female	4.255 1.366	4.727 1.288	1,109	15.63	< .000

Table IV. Intensity Ratings as a Function of Poser Gender

Judge culture	Poser culture	Poser culture		df	F	p
		Male	Female			
Anger						
American	Caucasian	7.374 .709	5.850 .964	1,122	323.33	< .001
Japanese	Caucasian	6.618 1.179	4.786 1.205	1,109	233.73	< .001
American	Japanese	6.463 1.025	5.915 1.169	1,122	30.91	< .001
Japanese	Japanese	4.800 1.329	4.723 1.259	1,109	.52	ns
Disgust						
American	Caucasian	5.919 1.354	6.187 1.117	1,122	4.91	< .05
Japanese	Caucasian	6.218 1.286	5.855 1.185	1,109	10.33	< .01
American	Japanese	6.252 1.043	5.699 1.236	1,122	29.32	< .001
Japanese	Japanese	6.394 1.258	5.894 1.461	1,108	27.00	< .001
Happiness						
American	Caucasian	5.899 1.211	6.677 1.075	1,123	68.09	< .001
Japanese	Caucasian	4.995 1.302	6.136 1.198	1,109	102.30	< .001
American	Japanese	6.634 1.038	6.691 .995	1,122	.46	ns
Japanese	Japanese	6.045 1.164	6.177 1.300	1,109	1.85	ns
Sadness						
American	Caucasian	4.411 1.238	4.911 1.379	1,123	17.69	< .001
Japanese	Caucasian	3.823 1.160	4.164 1.382	1,109	9.05	< .01
American	Japanese	4.561 1.387	4.886 1.504	1,122	6.49	< .05
Japanese	Japanese	3.068 1.261	3.750 1.299	1,109	33.61	< .001
Surprise						
American	Caucasian	5.825 1.182	5.341 1.279	1,122	20.48	< .001
American	Caucasian	4.500 1.581	4.255 1.366	1,109	3.43	< .07
American	Japanese	5.121 1.277	5.762 1.113	1,123	44.69	< .001
Japanese	Japanese	3.714 1.491	4.727 1.228	1,109	56.19	< .001

Table V. Mean Intensity Ratings (Across Gender and Culture of Poser) by Japanese and American Judges for Each Emotion

Emotion	M and SD	Finding
American judges		
Happiness	6.49 .91	$F(1,120) = 1.17, ns$
Anger	6.40 .78	
Disgust	6.02 .96	$F(1,120) = 23.66, p < .001$
Surprise	5.51 1.00	$F(1,120) = 28.58, p < .001$
Sadness	4.71 1.11	$F(1,122) = 74.84, p < .001$
Japanese judges		
Disgust	6.10 1.10	$F(1,108) = 4.28, p < .05$
Happiness	5.84 1.06	$F(1,109) = 29.33, p < .001$
Anger	5.23 1.00	$F(1,109) = 62.67, p < .001$
Surprise	4.29 1.16	$F(1,109) = 20.09, p < .001$
Sadness	3.70 1.02	

tions were then listed in order, from the highest mean intensity rating to the lowest, and pairwise differences between adjacent emotions were tested (Table V).

The ordering of the emotions in terms of the intensity attributed to each was different for the two cultures. For Americans, the order was happiness = anger > disgust > surprise > sadness. For the Japanese, the order was disgust > happiness > anger > surprise > sadness.

Relative Intensity Differences Among Posers

Six pairwise comparisons among the four poser types were made on the mean intensity ratings for each emotion: Caucasian male vs Caucasian female, Caucasian male vs. Japanese male, Caucasian male vs. Japanese female, Caucasian female vs. Japanese male, Caucasian female vs. Japanese

female, and Japanese male vs. Japanese female. The number of times the Americans and Japanese judges agreed on which photo was more intense was tallied across all six comparisons for all five emotions. The Americans and Japanese agreed 24/30 times, which was significant using the binomial test ($p < .05$). These findings indicated that the two cultures agreed on the relative intensity differences among the photos.

GENERAL DISCUSSION

The findings from this study indicated that (a) Japanese attributed less intense ratings than the Americans, regardless of the culture or gender of the posers judged, (b) these differences were obtained regardless of whether the intensity rating scale specified a particular emotional state, (c) the cultures were also different in the intensities they attributed to the different emotions, and (d) the cultures agreed on the relative intensity differences among the expressions.

These findings allow us to reject some of the explanations concerning cultural differences in the judgment of absolute emotional intensity offered by Ekman *et al.* (1987). Such differences are not spurious, for we replicated them. There is no evidence that these differences result simply as a matter of observers politely not judging foreigners to display intense emotions. There is some reason to believe that the differences are not due to differences in the translation of emotion terms, for cultural differences were obtained even when no emotion was specified in the intensity rating scale. However, this conclusion cannot yet be drawn, because the anchorless intensity ratings always occurred second, and it is possible that subjects' first ratings using the emotion terms influenced these second ratings.

We had predicted these cultural differences in the perception of emotion, extrapolating from Ekman and Friesen's findings (Ekman, 1972) on differences in emotional expression. They showed that Japanese more than Americans mask the expression of negative emotions in the presence of an authority figure (Friesen, 1972). They interpreted their findings as due to culturally learned display rules which prohibit the public display of negative emotions. We reasoned that similar rules for the interpretation of emotional display (called decoding rules by Buck, 1984) might cause the Japanese to discount the extent of emotion they see. The fact that the perception of emotional intensity was attenuated not just for anger and sadness but for surprise and happiness as well suggests that the Japanese display and decoding rules may have to do with the undue expression and perception of any emotion, not just negative emotion. The failure to find differences in the judgment of disgust was not predicted, and we have no a posteriori explanation.

While we have interpreted our findings as showing that Japanese make lower intensity ratings than Americans, we cannot actually be certain which set of ratings is a more accurate representation of the true intensity of the expression judged. Perhaps the Americans are exaggerating, and the Japanese intensity ratings are more accurate. A criterion of actual emotional intensity, either physiological data or subjective report, coincident with each expression is necessary to be more certain about this issue.

The level of agreement between the two cultures in relative intensity judgment, when all possible combinations of comparisons among photos were made, replicates Ekman and co-workers' (1987) finding concerning the universality of relative intensity judgments. These data extend those findings, in that we included posers of two cultures in this study. It is also interesting to note that the present study used more conservative criteria in testing relative intensity differences, in that it demonstrated the effect using a tally method without arbitrary cutoff limits. Ekman *et al.* (1987) also used the tally method but included only those comparisons whose mean differences were greater than one point.

Finally, there were also interesting findings concerning the intensity levels attributed across the various emotions. The Americans and Japanese are similar in that surprise and sadness were rated the least intense. The two cultures differed, however, in that happiness, anger, and disgust were the highest for the Americans, in that order, while disgust, happiness, and anger were the highest for the Japanese. These findings suggest that it would be interesting to examine the differential role of disgust in the two cultures, but especially in relation to anger in Japan. Disgust was the only emotion to be rated so intensely by the Japanese that judge culture differences did not exist. Also, data from another study on the attitudes concerning the various universal emotions are consistent with these findings concerning judgments of faces (Matsumoto, 1989).

Questions concerning cultural differences in intensity remain. For example, we do not know the boundaries of the cultural differences in the perception of intensity. Is it limited to the judgment of facial expressions of emotion, or might it occur with judgments of other facial attributes (e.g., beauty) or other emotion signs (voice not face)? Perhaps it is general to the judgment of any personal attribute, regardless of the source of the information being judged, or to any judgment of any kind. While the non-significant findings on disgust suggest that not all judgments are affected similarly, further research is needed to test the boundaries of these cultural differences and the nature of the processes involved.

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