

Ethnic Differences in Affect Intensity, Emotion Judgments, Display Rule Attitudes, and Self-Reported Emotional Expression in an American Sample¹

David Matsumoto²

San Francisco State University

Research of the past two decades has shown that cultures exert considerable influence over emotion. Most, if not all, of the cross-cultural research reported to date have been on samples obtained in different countries. Although it is important to address questions of cross-cultural similarities and differences via the testing of between-country differences, we need to be concerned with possible cultural differences within countries as well. The assessment of cultural differences within countries would have implications for not only our conceptual understanding of cultural influences on emotion, but also our empirical methods and procedures. In this study, American subjects were self-classified into one of four ethnic groups, and provided us with data concerning affect intensity, display rule attitudes, self-reported emotional expression, emotion labeling, and intensity ratings. The results indicated considerable differences in emotion judgments, display rules, and self-reported emotional expressions as a function of ethnicity within an American sample. The differences are discussed in terms of the need to search for psychologically meaningful and relevant definitions of culture which would cut across ethnicity or country.

¹This research was supported in part by a research grant from the National Institute of Mental Health (MH 42749-01), and by a faculty award for Creativity, Research, and Scholarship and a Faculty Affirmative Action Award from San Francisco State University. I would like to thank Andrea Chang for her assistance in the data collection; Ken Kokka for his editorial assistance on an earlier version of this manuscript; and Masami Kobayashi, Deborah Krupp, Mija Lee, Erika Maniatis, and Bill Roberts, for their aid on an earlier version of this article, and for their aid in my general research program.

²Address all correspondence, including requests for reprints, to David Matsumoto, Department of Psychology, San Francisco State University, 1600 Holloway Avenue, San Francisco, California 94132.

Research of the past two decades has shown that cultures exert considerable influence over emotion. Ekman (1972) and Friesen's (1972) early study on emotional expression, for example, documented how the display of emotion differs across cultures, depending on social situation. In their study, American and Japanese subjects viewed highly stressful films first alone, and then a second time in the presence of a higher status experimenter. When alone, members of both cultures displayed exactly the same facial expressions of disgust, anger, sadness, and fear. When in the presence of the experimenter, however, their expressions differed dramatically, with the Japanese invariably smiling rather than displaying their true negative feelings.

More recently, Matsumoto (1990) surveyed display rules in the United States and Japan by obtaining appropriateness ratings for six universal facial expressions in five social situations (alone, with ingroups, with outgroups, with higher-status others, and with lower-status others). There were many cultural differences, as the Japanese rated anger and fear more appropriate to outgroups, and anger more appropriate to lower-status others, than the Americans. The Americans, however, rated disgust and sadness more appropriate to ingroups.

Cultures also differ when judging emotions. For example, Ekman et al. (1987) reported that cultures differ in absolute intensity ratings of universal facial expressions of emotion. Matsumoto (1990) and Matsumoto and Ekman (1989) replicated and extended these findings, showing that cultural differences in intensity ratings occurred regardless of the race or gender of the poser being judged. Two other studies (Matsumoto, 1989, 1992) have also shown how members of different cultures differ in the labeling of which emotion they perceive when judging faces.

Several large-scale studies conducted by Scherer and his colleagues (summarized in Scherer, Wallbott, & Summerfield, 1986; and Wallbott & Scherer, 1986) have reported that cultures differ in the subjective experience of emotion as well. Two studies in particular (Scherer, Matsumoto, Wallbott, & Kudoh, 1988; Matsumoto, Kudoh, Scherer, & Wallbott, 1988), for example, reported cultural differences in self-reported emotional experience, including intensity, duration, and control of emotion; verbal and nonverbal expressions; physiological sensations and reactions; and evaluations of the emotion antecedents.

All of the research reported above involved cross-cultural comparisons based on samples obtained in different countries. Testing cultural differences across countries has been a common and well-accepted approach to cross-cultural research on emotion. Earlier research documenting the universality of facial expressions of emotion was no exception (e.g., see Ekman, 1972; Ekman, Sorenson, & Friesen, 1969; Ekman & Friesen, 1971;

Izard, 1971). In one of the most well known of these, for instance, Ekman and Friesen (1971) asked respondents in five different countries (the United States, Japan, Brazil, Chile, and Argentina) to judge which emotion was being shown in a series of still photographs.

Although it is important to address questions of cross-cultural similarities and differences via the testing of between-country differences, we need to be concerned with possible cultural differences *within* countries as well. Studies examining within-country cultural differences on emotion are extremely sparse, and what little does exist is by this time quite dated (e.g., Vinacke, 1949; Vinacke & Fong, 1955). Testing within-country cultural differences would be relatively easy to do, especially in a country such as the United States which is resident to people of many different ethnic and cultural groups. The same could be said about other diverse nations.

The lack of such studies may indicate a far too simplistic view of the nature of culture that was present in much of the previous cross-cultural research on emotion (my own included). Operationalizing culture by country has been convenient, but has methodological drawbacks and theoretical limitations. For example, there is an implicit assumption that the individuals comprising a sample from a country are relatively homogeneous with respect to each other, but relatively heterogeneous with respect to the individuals comprising a sample from another country. This problem is "handled" statistically, because parametric statistics testing group differences (e.g., analysis of variance) test between-country variability relative to the variability within the countries; of course, conclusions concerning cultural (i.e., country) differences are justified only if the between-country variance is significantly greater than the within-country variance.

The issue I raise, however, concerns our *theoretical* as well as our empirical understanding of culture. Can questions concerning cultural influences be adequately addressed by solely testing group differences between countries? I suggest not. The assessment of cultural differences within a country would contribute to our conceptual understanding of culture, and to between- and within-country cultural influences on emotion. Such an assessment would force us to begin to think about new definitions of culture that would be more meaningful than country labels and the associated stereotypes, impressions, or anecdotes that may be commonly used to interpret between-country differences when they occur.

For countries such as the United States, the testing of possible cultural differences within an American sample is both conceptually and empirically mandatory. One of the biggest reasons for this is that many cross-cultural studies use American samples as a comparison group. Many

studies, both cross-cultural and not, typically deal with the possibility of within-U.S. differences by keeping ethnicity constant (e.g., including only European Americans in the sample). The experimental control afforded by the relative ethnic homogeneity in the sample is a methodological advantage. But this procedure raises serious questions about the adequacy of that sample to represent the "American" culture.

On the other hand, allowing for subjects of diverse backgrounds to participate in the research has its own limitations. For example, if there really were systematic cultural differences in emotion within an American sample, the aggregated group data would be uninterpretable because one would never be sure what was being compromised in the data set, and how much. This apples-and-oranges dilemma would place us back at square one, forcing researchers basically to choose between a rock and a hard place.

One way to address this problem would be to actually test for cultural differences in our American samples. If differences were obtained, we could then devise strategies to deal appropriately with them in our research, and incorporate them into our conceptual understanding of culture. If differences were not obtained, then we could arrive at more appropriate conclusions concerning between-country cultural differences, and be more justified in the use of inclusion criteria in our studies. In either case, the formal testing of cultural differences on emotion would allow for the data derived from such a test to guide us in making informed decisions concerning methodology and theory.

There are, however, some potential pitfalls to this endeavor, one of which must be acknowledged at the outset. This concerns the possibility of making value judgments in the interpretations of cultural differences within an American sample, if and when found, and the maintenance of negative and potentially destructive stereotypes. Some differences may be more provocative than others. While some people may choose to make value judgments (e.g., right-wrong, good-bad, superior-inferior, etc.) based on the documentation of differences, I suggest that the researchers dealing in this area, and the academic community that may be consumers of the research, not intend to do so. Rather, our goals at this point should be descriptive and informative, to deal with this issue in as value-free a way as possible. The potential problems of value judgments based on studies examining within-country ethnic or cultural differences have hindered our attempts at facing this issue in the past.

The goal of this study was to examine possible differences in several emotion variables within an American sample as a function of ethnicity. While our primary interest was in cultural differences, unfortunately there is no method available at present to classify individuals according to meaningful

psychological definitions of culture. Thus, we have chosen to study possible cultural differences via ethnic differences, acknowledging the limitation of such an approach from the outset. This issue is discussed more fully in the methods section.

In this study, American subjects were self-classified into one of four ethnic groups (Caucasian, Black, Asian, or Hispanic).³ The subjects participated in two experimental sessions. In the first, they provided us with data concerning affect intensity, display rule attitudes, and self-reported emotional expression. In the second, they provided us with data concerning judgments of emotion, including emotion labeling and intensity ratings. Although there are a considerable number of studies that provide some basis for suggesting directional hypotheses on each of these dependent variables, many of these works are focused around American–Asian differences. In the absence of a theoretical or empirical rationale for positing directional differences involving all four ethnic groups here, this study tested the nondirectional hypotheses that (1) affect intensity, (2) degree of agreement in emotion labeling, (3) intensity ratings, (4) display rule attitudes, and (5) self-reported emotional expression would differ as a function of ethnicity.

METHOD

Subjects

Subjects were recruited from introductory psychology classes at a major urban university in the San Francisco Bay area, and participated in partial fulfillment of class requirements. A large number of subjects (approximately 200) were screened for possible inclusion in this study. Subjects who were either born or raised outside of the United States, or who could not identify themselves within one of four major ethnic groups, were eliminated from consideration in this study. The final list of subjects included 124 (55 males, 69 females) students, all of whom were born and raised in the United States, and who reported that their parents were of the same ethnic background. Thirty-six subjects identified themselves as Caucasian, 21 as Black, 46 as Asian, and 21 as Hispanic.

³There is some consensus now that more preferable terms for “Caucasian” and “Black” are European–American and African–American, respectively. When this study was conducted, the earlier terms were used in the research protocols. I have chosen to keep the original race names in this report, with no slight implied.

As discussed briefly in the introduction, these ethnic classifications do not define cultural differences per se. In the absence of an available measure of culture on the individual level, however, ethnicity was chosen as an alternative for testing purposes in this study. Until a valid and reliable measure of culture is available, many of the same problems discussed in the introduction concerning country labels apply to ethnic labels as well. This limitation is acknowledged. This does not diminish the importance, however, of addressing possible ethnic/cultural differences within countries, which was one of the goals of this study.⁴

In addition, the four ethnic labels clearly refer to generalized categories, ignoring possibly important ethnic-cultural differences within category. For example, subjects who were Chinese, Japanese, or Korean were classified together as Asian. The same was true for the other three ethnic groups. While it is important for these individual ethnicities to be tested separately, we considered the larger, four-group classification to be sufficient in this study to examine possible ethnic differences with somewhat meaningful sample sizes. This procedure would arguably inflate within-group variance on the emotion measures, making it more difficult to produce significant between-group differences. This, however, would be an acceptable type of Type II error.

Presession: Affect Intensity

Prior to the first session, subjects completed a demographic questionnaire, the Eysenck Personality Inventory (included for the purposes of another study—Matsumoto, 1993), and the Affect Intensity Measure (AIM; Larsen & Diener, 1987). This measure assesses the intensity of typical emotional experiences using a 40-item scale. Responses range from 1 to 5, with some items reverse-keyed. A single score is computed by averaging across all 40 items.

Session I: Display Rules and Self-Report of Emotional Expression

Facial Stimuli. The facial stimuli used in Sessions I and II came from Matsumoto and Ekman's (1988) *Japanese and Caucasian Facial Expressions of Emotion* (JACFEE). The JACFEE includes eight photos each of seven emotions (anger, contempt, disgust, fear, happiness, sadness, surprise), for

⁴The measurement of ethnicity and race themselves is not easy, and is filled with conceptual and methodological difficulties. The interested reader is referred to Zuckerman (1990) for an excellent discussion of this issue.

a total of 56 photos. Four photos within each emotion are posed by Caucasians; and four photos are posed by Japanese (two males and two females within each poser race). Each poser contributed only one photo to the entire set; all were college students.

All expressions have been reliably coded ($r = .91$) using Ekman and Friesen's (1978) Facial Action Coding System (FACS), ensuring that both the type and intensity of the facial muscle movements in each expression correspond to those of the universal emotions (Ekman & Friesen, 1975). Other studies using these photos have reported high agreement in subjects' interpretations of the emotion portrayed (Matsumoto, 1986; Matsumoto & Ekman, 1989).

Display Rules. Subjects were scheduled in groups ranging in size from 5 to 20. The methodology for assessing display rules was the same as used previously (Matsumoto, 1990; Matsumoto & Hearn, 1992). Fourteen of the JACFEE photos were used, including two photos (one Caucasian male, one Caucasian female) from each emotion. The two photos of each emotion were shown in pairs, and in a random order that changed for every group tested. When viewing the photos, subjects rated the appropriateness of each expression in eight social situations: alone, in public, with close friends, with family members, with casual acquaintances, with people of higher status, with people of lower status, and with children. For each, subjects used a 9-point scale (0 to 8) labeled *not at all* (0), *a little* (1), *moderately* (4), and *very much* (8).

No mention of emotion terms was made, either during the instructions or when completing the ratings. When the subjects rated one emotion, they viewed and rated the two examples of the next emotion, repeating the process for all seven emotions.

Self-Reported Frequency of Emotional Expressions. Subjects rated their own emotional expressions after completing the display rule ratings. While viewing the two photos for each emotion, subjects rated how frequently they themselves displayed the expression, using a 5-point scale ranging from 0 (*never*) to 4 (*always*). Subjects provided these ratings for all emotions.

Session II: Judgments of Emotion

Session II occurred 1 week after Session I. The facial stimuli used in Session II were all 56 photos of the JACFEE. Subjects were again tested in groups, and viewed the stimuli twice. The stimuli were presented one at a time, for 10 sec each, in a random order. During the first viewing, subjects chose a single term from a list of seven (anger,

contempt, disgust, fear, happiness, sadness, and surprise) that best described the emotion portrayed. This procedure allowed us to test for differences in how the subjects labeled the emotions they perceived in the expressions.

After all 56 photos were judged, subjects saw the stimuli again (same random order) and rated the intensity of each, using a 9-point scale (0 to 8) labeled *not at all* (0), *a little* (1), *a moderate amount* (4), and *a lot* (8).

All of the procedures described above have been used extensively in research in the United States and other countries with little difficulty. Post-session debriefing suggested no problems in the appropriateness of any of the measures for any of the ethnic groups. It would have been preferable to use facial stimuli that portray posers from each of the ethnic groups in the study; however, such a stimulus set does not exist, and in the absence of such a set, the presentation of the biracial JACFEE was deemed better than a single-poser race presentation.

Data Manipulation and Analysis Plan

The data analysis involved the testing of ethnic differences corresponding to the hypotheses presented earlier. The dependent data were transformed on an a priori basis into the scores described below. One-way ANOVAs testing ethnic differences were followed by tests of pairwise differences using a Student–Newman–Keuls procedure.

AIM Score. A single affect intensity score was produced for each subject based on their responses to the AIM, according to the standard scoring procedure (see above).

Display Rule Attitudes and Self-Reported Emotional Expression. Display rule attitude ratings were summed across items to produce separate scores for emotion (seven scores) and social situation (eight scores) for each subject. Self-reported emotional expression scores were used as rated, separately for each emotion.

Emotion Labeling and Intensity Ratings. Forced-choice emotion labels were analyzed in two ways — first via chi square tests on the nominal judgments separately for each expression, and second via analysis of variance (ANOVA) after recoding the nominal judgments into recognition accuracy scores (i.e., 0 = emotion not intended; 1 = emotion intended). The recoded recognition accuracy data and the intensity ratings were summed across photos for each subject prior to analyses to produce separate composite scores for each emotion (seven scores), poser race (two scores), and poser gender (two scores).

RESULTS

Hypothesis 1: Affect Intensity

A one-way ANOVA was computed on the AIM scores, using ethnicity (four levels) as the independent variable. The F was not significant, indicating that the ethnic groups did not differ in their affect intensity, $F(3, 116) = 1.05$, n.s. Thus, Hypothesis 1 was not supported.

Hypotheses 2 and 3: Emotion Judgments

Emotion Labeling. A chi square was computed on the nominal response categories, using ethnicity as the independent variable, separately for each expression. Of the 56 chi squares computed, only three were statistically significant (one expression each of happiness, sadness, and surprise). In addition, one-way ANOVAs using ethnicity as the independent variable were computed on the recoded accuracy scores, separately for each of the seven emotions, two poser races, and two poser genders. None of the 11 ANOVAs was statistically significant. Emotion labeling did not differ as a function of ethnicity; thus, Hypothesis 2 was not supported.

Intensity Ratings. One-way ANOVAs using ethnicity as the independent variable were computed on the composite intensity ratings, separately for each of the seven emotions, two poser races, and two poser genders (Table I). The F values for anger, disgust, fear, and Caucasian posers were all significant. Newman-Keuls followup tests indicated that (a) Blacks perceived anger more intensely than Asians; (b) Blacks perceived disgust more intensely than Caucasians and Asians; (c) Blacks and Hispanics perceived fear more intensely than Asians; (d) Blacks perceived Caucasian faces more intensely than did Caucasians and Asians; and (e) Blacks perceived female expressions more intensely than did Asians. These analyses, therefore, indicated considerable differences in intensity ratings as a function of ethnicity, supporting Hypothesis 3.

Display Rule Attitudes

One-way ANOVAs using ethnicity as the independent variable were computed on the composite display rule ratings, separately for each of the seven emotions and eight social situations (Table II). The F values for contempt, disgust, fear, and sadness were all significant. Newman-Keuls

Table I. Means, Standard Deviations (in parentheses), and Results of One-way *F* Tests Comparing the Four Ethnic Groups on the Intensity Ratings

| | Race | | | | <i>F</i> | <i>p</i> |
|---------------------|----------------|----------------|----------------|----------------|----------|----------|
| | Caucasian | Black | Asian | Hispanic | | |
| Emotion | | | | | | |
| Anger | 5.93 (0.87) | 6.28 (0.76) | 5.54 (1.08) | 6.14 (0.76) | 3.45 | < .05 |
| Contempt | 3.15 (0.72) | 3.56 (1.42) | 3.32 (0.91) | 2.85 (1.13) | 1.58 | ns |
| Disgust | 5.52 (0.86) | 6.40 (0.91) | 5.62 (1.01) | 5.81 (0.87) | 3.39 | < .05 |
| Fear | 5.77 (0.80) | 6.14 (0.67) | 5.44 (0.92) | 6.06 (0.98) | 3.80 | < .05 |
| Happiness | 5.96 (1.00) | 6.65 (1.28) | 6.11 (1.10) | 5.72 (1.23) | 2.15 | ns |
| Sadness | 4.14 (0.94) | 4.36 (1.38) | 4.16 (1.05) | 3.94 (1.07) | 0.40 | ns |
| Surprise | 4.98 (0.65) | 5.55 (0.75) | 5.05 (1.06) | 4.99 (1.27) | 1.37 | ns |
| Poser race | | | | | | |
| Caucasians | 5.09 (0.63) | 5.57 (0.65) | 4.99 (0.76) | 5.02 (0.77) | 2.70 | < .05 |
| Japanese | 5.07 (0.55) | 5.55 (0.71) | 5.06 (0.79) | 5.10 (0.71) | 1.95 | ns |
| Poser gender | | | | | | |
| Males | 5.08 (0.53) | 5.56 (0.66) | 5.07 (0.73) | 5.18 (0.75) | 2.18 | ns |
| Females | 5.11 (0.67) | 5.56 (0.77) | 4.95 (0.81) | 5.01 (0.72) | 2.44 | ns |

Table II. Means, Standard Deviations (in parentheses), and Results of One-way *F* Tests Comparing the Four Ethnic Groups on the Display Rule Attitude Ratings

| | Race | | | | <i>F</i> | <i>p</i> |
|-------------------------|----------------|----------------|----------------|----------------|----------|----------|
| | Caucasian | Black | Asian | Hispanic | | |
| Emotion | | | | | | |
| Anger | 4.10 (1.61) | 4.23 (1.53) | 3.84 (1.56) | 3.48 (1.66) | 0.99 | ns |
| Contempt | 5.73 (1.43) | 4.59 (1.94) | 4.98 (1.59) | 4.77 (1.58) | 2.79 | < .05 |
| Disgust | 4.92 (1.31) | 3.68 (1.75) | 4.29 (1.47) | 3.43 (1.63) | 5.33 | < .01 |
| Fear | 5.06 (1.65) | 3.68 (2.02) | 4.40 (1.78) | 3.68 (2.05) | 2.88 | < .05 |
| Happiness | 7.60 (0.84) | 7.20 (1.20) | 7.57 (0.55) | 7.57 (0.65) | 1.33 | ns |
| Sadness | 5.23 (1.58) | 3.87 (1.57) | 4.53 (1.51) | 4.43 (1.43) | 3.65 | < .05 |
| Surprise | 5.96 (1.34) | 5.65 (1.62) | 5.61 (1.44) | 5.33 (1.78) | 0.80 | ns |
| Social situation | | | | | | |
| Alone | 6.98 (1.15) | 5.92 (2.21) | 6.62 (1.68) | 6.44 (1.92) | 1.72 | ns |
| In public | 4.98 (1.20) | 4.24 (1.36) | 4.43 (1.24) | 3.90 (1.30) | 3.44 | < .05 |
| Acquaintances | 4.80 (1.03) | 3.89 (1.31) | 4.19 (1.29) | 3.79 (1.30) | 3.97 | < .01 |
| Close friends | 6.61 (1.10) | 5.84 (1.55) | 6.05 (1.24) | 5.86 (1.35) | 2.23 | ns |
| Family | 6.90 (1.12) | 6.16 (1.70) | 6.36 (1.17) | 6.34 (1.48) | 1.73 | ns |
| Higher status | 4.03 (1.64) | 3.52 (1.31) | 3.59 (1.46) | 3.17 (1.52) | 1.49 | ns |
| Lower status | 4.91 (1.43) | 4.03 (1.22) | 4.33 (1.28) | 3.83 (1.28) | 3.52 | < .05 |
| Children | 5.16 (1.25) | 4.33 (1.56) | 4.69 (1.45) | 4.02 (1.39) | 3.23 | < .05 |

analyses indicated that (a) Caucasians rated contempt more appropriately than Asians; (b) Caucasians rated disgust more appropriately than Blacks and Hispanics; (c) Caucasians rated fear more appropriately than Hispanics; and (d) Caucasians rated sadness more appropriately than Blacks or Asians.

In addition, the F values for the in public, with casual acquaintances, with lower-status others, and with children situations were all significant. Newman-Keuls analyses indicated that (e) Caucasians rated the in public situation more appropriately than Hispanics; (f) Caucasians rated the with casual acquaintances situation more appropriately than Blacks, Asians, and Hispanics; (g) Caucasians rated the with lower status others situation more appropriately than Blacks or Hispanics; and (h) Caucasians rated the with children situation more appropriately than Hispanics. Thus, Hypothesis 4 was supported.

Self-Reported Emotional Expression

One-way ANOVAs using ethnicity as the independent variable were computed on the self-reported emotional expression ratings, separately for each of the seven emotions (Table III). Only the F for anger was significant. Newman-Keuls analyses indicated that Blacks reported expressing anger more frequently than Caucasians, Asians, and Hispanics, supporting Hypothesis 5.

DISCUSSION

The results reported above suggest considerable differences in emotion judgments, display rules, and self-reported emotional expressions as a function of ethnicity within an American sample. Blacks perceived greater intensity when judging emotions, and reported a greater frequency of anger expressions, than did the other ethnic groups. Caucasians generally rated the display of the emotions more appropriate than did the other groups. The findings can also be described in the opposite direction; for example, Asians were found to have consistently lower intensity-judgments and display rule appropriateness ratings.

This summary glosses over a number of emotion- and ethnicity-specific findings that were uncovered in the analyses. These findings need to be replicated in order to determine whether emotion- and ethnic-specificity are reliable, or whether the more general summary statements are adequate representations of the nature of the ethnic differences. The differences that we did find, however, may not be trivial; the relatively small sample sizes argue

Table III. Means, Standard Deviations (in parentheses), and Results of One-way *F* Tests Comparing the Four Ethnic Groups on the Self-Reported Emotional Expression Ratings

| | Race | | | | <i>F</i> | <i>p</i> |
|-----------|----------------|----------------|----------------|----------------|----------|----------|
| | Caucasian | Black | Asian | Hispanic | | |
| Emotion | | | | | | |
| Anger | 1.53 (0.71) | 2.19 (0.60) | 1.56 (0.69) | 1.48 (0.75) | 5.33 | < .01 |
| Contempt | 2.09 (0.71) | 2.29 (1.06) | 2.24 (0.68) | 2.38 (0.74) | 0.69 | ns |
| Disgust | 1.76 (0.61) | 1.90 (1.00) | 1.73 (0.65) | 1.67 (0.66) | 0.43 | ns |
| Fear | 1.47 (0.66) | 1.43 (0.68) | 1.47 (0.73) | 1.33 (0.86) | 0.19 | ns |
| Happiness | 3.09 (0.57) | 3.19 (0.68) | 3.22 (0.52) | 3.24 (0.62) | 0.43 | ns |
| Sadness | 1.91 (0.63) | 1.90 (0.70) | 1.78 (0.70) | 1.81 (0.60) | 0.32 | ns |
| Surprise | 2.06 (0.55) | 2.24 (0.70) | 2.11 (0.68) | 2.00 (0.84) | 0.49 | ns |

against finding trivial significant differences because of inflated power due to sample size. Instead, these findings are important stepping stones to uncovering further ethnic and cultural differences within the United States, and have important theoretical and methodological implications for our understanding of ethnic, and cultural, influences on emotion.

How are we to predict and interpret ethnic differences on emotion, such as those reported in this study? Sociological approaches would suggest the existence of large-scale, social-based influences that would effect changes in emotion systems in the different ethnic groups. One may posit, for example, that a history of oppression and subjugation of Black people has led to their learning to attribute, over time, greater intensity to the emotional expressions of others, and to more frequent displays of emotions such as anger. A similar approach could explain the lower intensity-judgments and display rule appropriateness ratings by the Asians, who as a whole mirrored previous findings comparing American and Japanese responses (e.g., Matsumoto, 1990; Matsumoto & Ekman, 1989).

I suggest, however, that we begin to think about how these differences can also be interpreted as manifestations of differences in psychological culture, not ethnicity *per se*. Ethnicity is defined most often by biological determinants; culture, however, must be defined by sociopsychological factors, such as the shared system of beliefs, attitudes, values, and behaviors, communicated from one generation to the next via language. Defined in this way, the parameters of culture are “soft,” and perhaps more difficult to distinguish, than the parameters of ethnicity, which are set in biology and morphological differences. While not denying the importance of these biological (and physiological) parameters on emotion, we need to better understand how the softer parameters of culture can influence emotion.

This approach suggests that an interpretation of ethnic differences in emotion, such as those reported in this study, involves first a delineation of the culture underlying the different ethnic groups in the study, and second an examination of how that psychological culture affects emotion. For example, the culture associated with the Asian groups may be one that stresses collectivism and intragroup harmony more strongly than the cultures of Caucasian, Black, or Hispanic groups. In collective cultures, there is greater need to suppress one’s emotional reactions, so as not to offend others in the group, avoiding conflict and confrontation. Collective cultural norms may provide a framework within which the members of the collective culture learn to attribute less intensity to the emotions of others, and to discourage the outward expression of emotion. Such a system would, therefore, account for the lower intensity-judgments and display rule appropriateness ratings found in this study.

A focus on psychological culture has other advantages as well. Ethnicity *per se* cannot account for individual differences within groups on emotion. Identifying the psychological cultures underlying ethnic groups, however, does allow for individual variations within a culture itself, as some people will be more enculturated than others, even within a single ethnic group. This allowance for within-group variations on psychological culture is a better candidate for accounting for within-group variations than ethnicity.

The data generated in this study indicate that some emotion variables do indeed differ as a function of ethnicity within an American sample. But more importantly, the data also suggest that these observed ethnic differences are only a few of the many emotion differences that are conceptually possible. As we turn our focus on diversity within the United States from ethnicity to psychological culture, the potential for finding even more differences on emotion becomes larger because the variability associated with psychological culture must be larger than the variability defined by the parameters of ethnicity.

The difference between ethnic and cultural influences on emotion may be even more apparent in countries that are more ethnically homogeneous than the United States. In Japan, for example, the vast majority of the population is ethnically Japanese. However, it is not unreasonable to predict that there are consistent, systematic differences in emotion within Japan as a function of psychological culture. These differences may result from a variety of factors, such as education, politics, geography, climate, crowding, etc., that have an impact on psychological culture. Such differences could not be accounted for solely on the basis of ethnicity, as it would more or less be a constant in such a study.

These ideas, if valid, would have considerable methodological import as well. First of all, they question the adequacy of cross-cultural comparisons based solely on separation according to country. Differences, when found, are indeed reflective of something. But without a solid basis for positing the nature of a psychological culture that underlies the samples being compared, the meaning of cultural, or rather national, differences, is diminished.

Second, these data force us to examine what cross-cultural researchers consider to be an "adequate" American sample. If the differences reported in this study are reliable, then cross-cultural researchers using American samples for comparison are faced with a dilemma. Should they restrict their samples to ethnically homogeneous groups? Or should they allow for an "equal" representation of different ethnic groups in their American samples? The trade-off for experimental control is the adequacy of the sample to represent the actual diversity that exists in the American population. There is no easy answer to this dilemma; perhaps the third issue discussed below offers a solution.

Third, and most importantly, these ideas suggest that we search for, and use, methods to measure culture, on the level of the individual, as a methodological and theoretical necessity in our research. This approach would require us to isolate a few constructs that are theoretically most meaningful in the definition of culture, and to develop methods of quantifying individual and group differences on these constructs. Triandis and his colleagues, for example, have developed a variety of measures to assess the cultural dimension known as individualism vs. collectivism (Triandis, McCusker, & Hui, 1990). The incorporation of such measures as these in our cross-cultural work is a must. With these measures, we would be able to determine exactly how much variability in emotion is due to psychological culture (or at least this dimension's definition of it), and how much is due to ethnic differences or individual variability. If culture can account for most of the differences we observe in emotion, then the ethnic composition of our American samples is not the issue: the cultural composition, defined by psychologically meaningful dimensions, is.

REFERENCES

- Ekman, P. (1972). Universals and cultural differences in facial expressions of emotion. In J. Cole (Ed.), *Nebraska Symposium on Motivation*. Lincoln: University of Nebraska Press.
- Ekman, P., & Friesen, W. V. (1971). Constants across cultures in the face and emotion. *Journal of Personality and Social Psychology*, *17*, 124-129.
- Ekman, P., & Friesen, W. V. (1975). *Unmasking the face: A guide to recognizing emotions from facial clues*. Englewood Cliffs, NJ: Prentice-Hall.
- Ekman, P., & Friesen, W. V. (1978). *Facial action coding system*. Palo Alto, CA: Consulting Psychologists Press.
- Ekman, P., Friesen, W. V., O'Sullivan, M., Chan, A., Diacoyanni-Tarlatzia, I., Heider, K., Krause, R., LeCompte, W., Pitcairn, T., Ricci-Bitti, P., Scherer, K., Tomita, M., & Tzavaras, A. (1987). Universals and cultural differences in the judgments of facial expressions of emotion. *Journal of Personality and Social Psychology*, *53*, 712-717.
- Ekman, P., Sorenson, E. R., & Friesen, W. V. (1969). Pancultural elements in facial displays of emotion. *Science*, *164*, 86-88.
- Friesen, W. V. (1972). *Cultural differences in facial expression in a social situation: An experimental test of the concept of display rules*. Unpublished doctoral dissertation, University of California, San Francisco.
- Izard, C. E. (1971). *The face of emotion*. New York: Appleton-Century-Crofts.
- Larsen, R. J., & Diener, E. (1987). Affect intensity as an individual difference characteristic: A review. *Journal of Research in Personality*, *21*, 1-39.
- Matsumoto, D. (1986). *Cross-cultural communication of emotions*. Unpublished doctoral dissertation, University of California, Berkeley.
- Matsumoto, D. (1989). Cultural influences on the perception of emotion. *Journal of Cross-Cultural Psychology*, *20*, 92-105.
- Matsumoto, D. (1990). Cultural similarities and differences in display rules. *Motivation and Emotion*, *14*, 195-214.
- Matsumoto, D. (1992). American-Japanese cultural differences in the recognition of universal facial expressions. *Journal of Cross-Cultural Psychology*, *23*, 72-84.
- Matsumoto, D. (1993). *Extraversion-introversion and judgments of emotion*. Unpublished manuscript.
- Matsumoto, D., & Ekman, P. (1988). *Japanese and Caucasian facial expressions of emotion (JACFEE) and neutral faces (JACNeuf)*. [Slides]. San Francisco: San Francisco State University. Available from Emotion Research Laboratory, Department of Psychology, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132.
- Matsumoto, D., & Ekman, P. (1989). American-Japanese cultural differences in intensity ratings of facial expressions of emotion. *Motivation and Emotion*, *13*, 143-157.
- Matsumoto, D., & Hearn, V. (in press). Culture and emotion: Display rule differences between the United States, Poland, and Hungary. *Motivation and Emotion*.
- Matsumoto, D., Kudoh, T., Scherer, K., & Wallbott, H. (1988). Emotion antecedents and reactions in the U.S. and Japan. *Journal of Cross-Cultural Psychology*, *19*, 267-286.
- Scherer, K., Matsumoto, D., Wallbott, H., & Kudoh, T. (1988). Emotional experience in cultural context: A comparison between Europe, Japan, and the U.S.A. In K. Scherer (Ed.), *Facets of emotion: Recent research*. Hillsdale, NJ: Erlbaum.
- Scherer, K. R., Wallbott, H., & Summerfield, A. (Eds.). (1986). *Experiencing emotion: A cross-cultural study*. Cambridge, England: Cambridge University Press.
- Triandis, H. C., McCusker, C., & Hui, C. (1990). Multimethod probes of individualism and collectivism. *Journal of Personality and Social Psychology*, *59*, 1006-1020.
- Vinacke, W. E. (1949). The judgment of facial expressions by three national-racial groups in Hawaii: I. Caucasian faces. *Journal of Personality*, *17*, 407-429.
- Vinacke, W. E., & Fong, R. W. (1955). The judgment of facial expressions by three national-racial groups in Hawaii: II. Oriental faces. *Journal of Social Psychology*, *41*, 184-195.

- Wallbott, H., & Scherer, K. R. (1986). How universal and specific is emotional experience? Evidence from 27 countries on five continents. *Social Science Information, 25*, 763-796.
- Zuckerman, M. (1990). Some dubious premises in research and theory on racial differences. *American Psychologist, 45*, 1297-1303.