# MAPPING EXPRESSIVE DIFFERENCES AROUND THE WORLD
## The Relationship Between Emotional Display Rules and Individualism Versus Collectivism

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Despite the importance of the concept of cultural display rules in explaining cultural differences in emotional expression and despite the fact that it has been more than 30 years since this concept was coined, there is yet to be a study that surveys display rules across a wide range of cultures. This article reports such a study. More than 5,000 respondents in 32 countries completed the Display Rule Assessment Inventory. The authors examined five hypotheses concerning the relationship between display rules and individualism-collectivism (IC). The findings indicated the existence of several universal effects, including greater expression toward in-groups versus out-groups, and an overall regulation effect. Individualistic and collectivistic cultures differed on overall expressivity endorsement and in norms concerning specific emotions in in-group and out-group situations.

**Keywords:**   display rules; emotion; expression; individualism–collectivism; cultural norms

**Display rules are cultural norms** that dictate the management and modification of emotional displays depending on social circumstances (Ekman & Friesen, 1969). They gained prominence in a study in which Americans and Japanese viewed stressful stimuli first alone and then with a higher status experimenter (Ekman, 1972). In the first condition, there were no cultural differences in displays; in the second, the Japanese were more likely to smile. These differences were interpreted to have occurred because of a Japanese display rule to mask negative emotions to the higher status experimenter.

Other than a few studies involving a limited number of cultures (Matsumoto, 1990, 1993; Matsumoto, Takeuchi, Andayani, Kouznetsova, & Krupp, 1998; Matsumoto, Yoo, Hirayama, & Petrova, 2005; Stephan, Stephan, & de Vargas, 1996), however, there has never been a comprehensive assessment of display rules around the world. We address this gap by surveying display rules in 32 countries using the Display Rule Assessment Inventory (Matsumoto et al., 1998; Matsumoto et al., 2005) and link the findings to the cultural dimension known as individualism-collectivism (IC). Below we provide a theoretical framework describing the cultural functions of emotion and then develop predictions for the relationship between IC and display rules.

### The Cultural Functions of Emotion

We define culture as a meaning and information system that is transmitted across generations (Matsumoto, in press; Matsumoto & Juang, 2007). One of its functions is to prevent social chaos and maintain social order, and one of the many ways this is accomplished is by the creation of norms for behaviors. Norms provide guidelines for thinking, feeling, and doing in specific situational contexts that are accepted and expected by a group. They reduce the ambiguity of situations, thereby maintaining social order. They also maximize group function and effectiveness, given a specific situational context and ecology, and ultimately increase the potential for survival.

Because norms require behavioral adaptation, they are associated with the regulation of emotions, because emotions are a source of motivation for behaviors. Emotions are neurophysiological and psychological reactions that aid in adapting to social coordination problems. They have both intra- and interpersonal functions (Keltner & Haidt, 1999; Levenson, 1999). One of the components of emotional responding, expressive behavior, has important communicative function value because it regulates social interaction. Thus, one of the important goals of culture-as-a-meaning system is to facilitate the development of norms for emotions, and especially emotional expressions (i.e., display rules).

### Individualism-Collectivism and Norms for Expressivity

There are many ways of understanding culture, and one major way in which the contents of culture have been examined is through values. Over the years, many cultural value dimensions have been explicated (Hofstede, 2001; Schwartz, 2004; Smith, Dugan, & Trompenaars, 1996); in this article, we focus on IC (Hofstede, 1980, 2001). Four attributes

define this dimension (Triandis, 1995): self, goals, relationship, and determinants of behavior. On the one hand, individualistic cultures foster the development of independent construals of self (Markus & Kitayama, 1991), favor personal goals over in-group goals (Yamaguchi, 1994), encourage rationality and interpersonal exchange (Kim, Triandis, Kagitcibasi, Choi, & Yoon, 1994), and place more importance on attitudes as relatively important determinants of behavior. On the other hand, collectivistic cultures foster interdependent selves and in-group goals, encourage relatedness and communal relationships, and place relatively more importance on norms as determinants of behavior.

Emotions have relatively greater intrapersonal meaning in individualistic cultures (Suh, Diener, Oishi, & Triandis, 1998). Personal feelings, and their free expression, reaffirm the importance of the individual compared to social relationships. Collectivistic cultures, however, foster a focus on groups, contexts, and relationships, and personal feelings and their free expression are relatively less important compared to their interpersonal meaning. Thus, we expect individualistic cultures to be associated with norms endorsing greater overall expressivity (Hypothesis 1 below).

There is also within-culture variability around norms. We identify two forms of such variability: *interindividual variability*, individual differences in overall expressivity norms across contexts and emotions, and *intraindividual variability*, variability within an individual across contexts and emotions. The relationship between intracultural variability and culture has not been examined much in the literature, with only few exceptions (Au, 1999, 2000), and this study addresses this gap. The greater freedom of emotional expression associated with individualistic cultures should result in a larger bandwidth of expression possibilities for individuals in these cultures, resulting in greater interindividual variability. That is, there should be relatively more differences among people in individualistic cultures (Hypothesis 2a). Conversely, individualism emphasizes consistency across contexts; thus, it should be associated with less intraindividual variability (Hypothesis 2b).

## Differences in Emotion Norms in Self-In-Group Versus Self-Out-Group Relationships as a Function of IC

One important distinction that individuals in all societies make is that of in-groups and out-groups (Brewer & Kramer, 1985; Messick & Mackie, 1989; Tajfel, 1982). Self-in-group relationships are characterized by a previous history of shared experiences and an anticipated future, and they produce a sense of intimacy, familiarity, and trust; self-out-group relationships lack these qualities. Self-in-group relationships, therefore, should be associated with norms for greater emotion expressivity because there is less anxiety resulting from the ambiguity or uncertainty of the meaning of emotional expression to the self or the relationship. Self-out-group relationships, however, should be associated with norms for relatively less expression precisely because of the greater ambiguity and uncertainty associated with these relationships. Because these qualities characterize in-groups and out-groups panculturally, we predict that this difference in emotion expressivity endorsement will be universal (Hypothesis 3).

One of the important features of IC, however, is to ascribe different meanings to self-in-group and out-group relationships (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). For instance, members of individualistic cultures have more in-groups, and they are attached less to any single in-group; members of collectivistic cultures belong to fewer in-groups, and their commitment to in-groups is greater than individualistic cultures (Hui, Triandis, & Yee, 1991; Pearson & Stephan, 1988; Wheeler, Reis, & Bond, 1989).

Collectivistic cultures foster a greater degree of conformity within their in-groups, and sanctions exist for nonconformity (Bond & Smith, 1996). A high degree of conformity ensures that individuals are identified and bonded with their in-groups, allowing groups to function and for their needs to supersede individual ones. Subjugating personal goals in favor of the group is a primary feature of collectivism, whereas facility in interacting with strangers is a primary feature of individualism (Oyserman, Coon, & Kemmelmeier, 2002). Individualistic cultures foster less conformity within groups because they do not rely as much on identification with groups for the effective functioning of either the groups or the individuals for survival.

These differences should be associated with different cultural goals for expressive behavior that facilitate behavioral adaptation. Subordinating personal desires for in-group goals in collectivistic cultures, for instance, requires the relinquishing of plans; the diversion of behavior; the adoption of in-group–defined desirable behavior; and at times, the assimilation of in-group–congruent attitudes, beliefs, or opinions. All of these require the regulation of emotion and expressive behavior.

Thus, collectivistic cultures should foster emotional displays toward in-groups that maintain and facilitate group cohesion, harmony, or cooperation to a greater degree than individualistic cultures (Matsumoto, 1991). This cultural goal should be achieved differently for different emotions, because emotions differ in their interpersonal meaning. Negative emotions can threaten in-group cohesion, whereas positive emotions can bring people together. Thus, we predict that collectivistic cultures will be associated with norms for relatively less expression of negative emotions but greater expression of positive emotions toward in-groups, whereas individualistic cultures should be associated with norms for relatively greater negative and less positive emotions toward in-groups (Hypotheses 4a and 4b).

The opposite should be true for self-out-group relationships. Here, individualistic cultures should be associated with norms for relatively more positive (Hypothesis 4c) and less negative (Hypothesis 4d) emotions toward out-groups, because doing so minimizes the differences between in-groups and out-groups and treats out-group members like in-group members in a relatively more egalitarian fashion. However, collectivistic cultures should be associated with relatively more negative and less positive emotions toward out-groups, because doing so enables greater distancing between in-groups and out-groups and reinforces in-group identity, a feature of collectivistic cultures.

Another way to describe these predictions is by examining within-country differences. If individualistic cultures endorse norms for relatively greater expression of negative emotions with in-groups and less with out-groups, within-country in-group–out-group differences in expression norms for negative emotions should be scaled positively for these cultures. Thus, we predict a positive correlation between individualism and the within-country in-group–out-group difference in expression norms for negative emotions (Hypothesis 5a). Conversely, we predict a negative correlation between individualism and the within-country in-group–out-group difference in expression norms for positive emotions (Hypothesis 5b).

## Overview and Hypotheses

Participants from 32 countries completed a revised version of the Display Rule Assessment Inventory (DRAI) that surveyed display rules across a wide range of contexts and emotions. The DRAI allows for an assessment of different behavioral responses in relation to multiple emotions and contexts. Two previous studies used the DRAI cross-culturally, the first documenting differences in display rules between the United States,

Japan, South Korea, and Russia (Matsumoto et al., 1998), and the second (Matsumoto et al., 2005) between the United States, Japan, and Russia. The second study also provided evidence for the DRAI's internal and temporal reliability, and its content, convergent, discriminant, external, and concurrent predictive validity. The current study is the first to survey display rules across a wide range of emotions, contexts, and cultures.

One of the unique features of the DRAI is that respondents select one of six theoretically derived behavioral choices they believe individuals *should* do when feeling different emotions in different situations toward different interactants. The data, therefore, are nominal, repeated measures. Although an examination of each specific behavioral choice is warranted and important, the analysis and presentation of such data would be cumbersome and potentially redundant. In this article, therefore, we examine the hypotheses developed above by reducing the nominal behavioral categories to a single dimension of expressivity based on the results of a homogeneity analysis via alternating least squares (HOMALS) analysis (details below). Using the HOMALS-derived dimension of expressivity, we tested the following hypotheses, according to the theoretical rationales described above:

> *Hypothesis 1: Country and cultural differences on overall expressivity norms*. Individualism is positively associated with higher overall expressivity norms.
>
> *Hypothesis 2: Culture and intracultural variability in expressivity norms*. Individualism is positively correlated with interindividual variability (2a), but negatively correlated with intraindividual variability (2b).
>
> *Hypothesis 3: In-group/out-group differences in expressivity norms*. Individuals universally endorse more expression with in-groups and less with out-groups.
>
> *Hypothesis 4: Cultural differences in in-group and out-group expressivity norms*. Individualism is associated with relatively higher expression norms for negative emotions to in-groups (4a) and lower expression norms for positive emotions to in-groups (4b), and relatively lower norms for negative emotions to out-groups (4c) and higher norms for positive emotions to out-groups (4d).
>
> *Hypothesis 5: Cultural differences in in-group versus out-group differences*. Individualism is positively correlated with larger within-country in-group/out-group differences in expression norms for negative emotions (5a), but negatively correlated with the same differences for positive emotions (5b).

## METHOD

### Participants

Participants were university students recruited by each of the collaborators in their respective countries, all participating voluntarily or in partial fulfillment of class requirements. A total of 6,048 respondents in 33 countries participated initially. The sample was limited to only those who were born and raised in their respective country, and one country was dropped (Lebanon) because of small sample size, which resulted in a final sample of 5,361 individuals from 32 countries on five continents (Table 1). The final sample was 61.6% female and 38.4% male; mean age was 22.47 years; 86.6% were single; 8.7% were Buddhist, 21.3% were Catholic, 18.6% were Christian, 8.5% were Hindu, and 18.7% were Muslim. Almost half (48.6%) reported proficiency in at least one other language; all protocols were translated into the local language for administration as determined by the collaborator. Ninety-one percent classified themselves in the middle income range, as defined within their national context.[1]

**TABLE 1**
**Descriptive Statistics for Each of the Countries**

| Country | N | Overall Expressivity | Interindividual Variation | Intraindividual Variation |
|---|---|---|---|---|
| Australia | 128 | 0.510 | 0.129 | 0.344 |
| Bangladesh | 96 | 0.422 | 0.118 | 0.377 |
| Belgium | 88 | 0.498 | 0.123 | 0.366 |
| Brazil | 111 | 0.495 | 0.170 | 0.370 |
| Canada | 195 | 0.520 | 0.111 | 0.359 |
| Croatia | 92 | 0.451 | 0.140 | 0.373 |
| Czech Republic | 100 | 0.468 | 0.129 | 0.339 |
| Denmark | 53 | 0.505 | 0.130 | 0.333 |
| Georgia | 99 | 0.478 | 0.122 | 0.371 |
| Germany | 115 | 0.455 | 0.108 | 0.350 |
| Greece | 90 | 0.452 | 0.118 | 0.372 |
| Hong Kong | 102 | 0.399 | 0.147 | 0.324 |
| Hungary | 92 | 0.495 | 0.126 | 0.363 |
| India | 464 | 0.495 | 0.105 | 0.393 |
| Indonesia | 199 | 0.420 | 0.140 | 0.338 |
| Israel | 87 | 0.442 | 0.121 | 0.370 |
| Italy | 108 | 0.451 | 0.135 | 0.363 |
| Japan | 377 | 0.464 | 0.134 | 0.351 |
| Malaysia | 600 | 0.446 | 0.156 | 0.342 |
| Mexico | 230 | 0.485 | 0.132 | 0.363 |
| Netherlands | 104 | 0.496 | 0.109 | 0.354 |
| New Zealand | 90 | 0.502 | 0.104 | 0.352 |
| Nigeria | 78 | 0.506 | 0.150 | 0.360 |
| People's Republic of China | 87 | 0.471 | 0.129 | 0.363 |
| Poland | 162 | 0.477 | 0.146 | 0.363 |
| Portugal | 128 | 0.477 | 0.137 | 0.357 |
| Russia | 53 | 0.432 | 0.119 | 0.370 |
| South Korea | 152 | 0.449 | 0.150 | 0.353 |
| Switzerland | 66 | 0.446 | 0.124 | 0.345 |
| Turkey | 221 | 0.467 | 0.113 | 0.378 |
| United States | 691 | 0.519 | 0.138 | 0.352 |
| Zimbabwe | 82 | 0.523 | 0.131 | 0.363 |

## Instruments

*Display Rule Assessment Inventory*. The DRAI was adapted for use in this study by inviting 75 collaborators in 40 countries to comment on an adapted version of it and to suggest modifications that would allow for a full assessment of display rules across a wide range of contexts and interactants, keeping intact the emotions queried and the response alternatives provided, but that was at the same time meaningful in each respective cultural context. All comments were compiled by the central research team (Matsumoto and Yoo) and fed back to all collaborators with suggested changes and requests for additional comments. This iterative process was repeated until all collaborators in all countries agreed on a version that would provide what they believed would be meaningful data in their respective country.

The final version asked participants what they *should do* if they felt each of seven emotions toward 21 target interactants in two settings—public and private. The emotions were anger, contempt, disgust, fear, happiness, sadness, and surprise. The 21 target interactants

were the following: alone, father, mother, older brother, older sister, younger brother, younger sister, male close friend, female close friend, male acquaintance, female acquaintance, male student higher class year, female student higher class year, male student same class year, female student same class year, male student lower class year, female student lower class year, male older professor, female older professor, male young professor, female young professor. No mention was made of facial expressions, except for the response alternatives qualification and masking, which describe smiling as part of the behavioral response. The descriptions for the private and public contexts were different for each interactant so as to be as realistic as possible. For example, the private context when interacting with father was "at home by yourselves;" in public, the context was "at a restaurant in plain view within earshot of others." For male older professor, the private context was "at his office in a private meeting by yourselves;" in public, the context was "at the university cafeteria in plain view within earshot of others."

The response alternatives were those corresponding to the theoretical modes of expression management originally described by Ekman and Friesen (1969, 1975): Show more than you feel it, express it as you feel it, show the emotion while smiling at the same time, show less than you feel it, hide your feelings by smiling, and show nothing, which correspond to amplification, expression, qualification, deamplification, masking, and neutralization, respectively. In addition, the respondents were provided with an "Other" category, which was used only 0.27% of the time, indicating that its usage was negligible. The emotion definitions came from a standard dictionary, and each was accompanied by an example that came from previous studies using the same stories in an emotion judgment task (Matsumoto & Ekman, 2004; Rosenberg & Ekman, 1995). All collaborators agreed on the definitions and examples for each of the seven emotions. The entire instrument, along with instructions, can be found at http://www.davidmatsumoto.info/Research_Tools/RevisedDRAI.pdf.[2]

*Relationship closeness*. The respondents rated the closeness of their relationships with each of the 20 non-self-target interactants on five items. First they indicated how long they have known the target individual (was not asked for family) and how many days a month they interact with them. Then, they rated how close they are to the person, how well they know them, and how committed they are to meeting and spending time with them in the future. For the latter three items, respondents used a 6-point-scale anchored 0 (*not at all*) to 5 (*very much*).

*Operationalization of in-group and out-group interactants on the DRAI*. We operationalized in-groups as close friends and out-groups as acquaintances, averaging across male and female interactants within each. As a manipulation check, we computed scores on relationship closeness by averaging ratings on the latter three items described immediately above, across male and female interactants. Across the entire data set, Cronbach's alphas were .81 and .89 for close friends and acquaintances, respectively; similar alphas were obtained separately for each country. One-way repeated measures ANOVAs on the relationship scores were statistically significant for each country and were associated with large effect sizes. Across the entire data set, close friends ($M = 3.19$, $SE = .009$) had significantly higher ratings than acquaintances ($M = 1.68$, $SE = .011$), $F(1, 5281) = 13,351.48$, $p < .001$, $\eta_p^2 = .72$. These ratings confirmed that participants made large distinctions between close friends and acquaintances on the basis of their relationship closeness, which supported our labeling of them as in-groups and out-groups.

## Procedures

The procedures were the same in all countries. All protocols were translated into the native language of the country or group in which data were collected, and collaborators managed the data collection and back-translation process in their respective country. Participants were provided with one of eight versions of the DRAI; the versions differed according to the order of the interactants being rated to eliminate order effects within the instrument. Participants either completed the measure in class or took the measure home to complete and return within 1 week. Collaborators either entered their data according to a standardized format or sent the raw data to the central research team in San Francisco for processing.

## Individualism

The culture dimension data came from Hofstede's (2001) long-term study of cultural dimensions. Originally based in his work in a multinational company (Hofstede, 1980), there were data on the original four dimensions (Individualism, Power Distance, Uncertainty Avoidance, and Masculinity) from 50 countries and three regions. Hofstede (2001) generated index scores for each country on the basis of the country means of the items related to each dimension from his values questionnaire. Hofstede (2001) reported data for a combined mean of East Africa, which was used for Zimbabwe. In addition, index score estimates for an additional 16 countries were available; these were used for China, Poland, and Hungary. Data are available as both indexes and ranks; as ranks produced essentially the same findings as means, we report findings only with indexes below for parsimony. Data on Individualism were available for 31 countries in this study.

## Scoring the DRAI

*Data transformations*. There are many ways to score the DRAI. For the purpose of this article, we opted to search for a way to convert the original nominal raw data into continuous scales so as to maximize the use of inferential statistics given the repeated measures, factorial nature of the data set (ratings of 7 Emotions × 21 Interactants × 2 Settings). Our major concern was to find a way to transform the data into a dimension that was psychometrically equivalent across all cultures.[3]

Homogeneity Analysis via Alternating Least Squares (HOMALS) analysis provides for a way to test for the availability of dimensions that are equivalent across samples. HOMALS is a multiway elaboration of correspondence analysis and is the most appropriate technique for identifying underlying dimensions in repeated measures nominal data (Blasius & Greenacre, 1997). In correspondence analysis rows and columns in a table are represented in a configuration. The starting point is the frequencies in the table. The row and column elements are represented in a single space in such a way that those row and column elements that are observed more often together than others are situated nearer one another in space. The absolute frequencies of the row and column elements are not taken into account. HOMALS extends this procedure to multiway tables, which is the nature of the data of the DRAI. HOMALS is the optimal procedure that will allow for a test of our hypotheses using the identified common dimension of expressivity underlying the nominal behavioral choices of the DRAI.

We performed a HOMALS analysis on each sample split by gender to allow for possible interaction effects between the gender of the respondent and interactant. For each sample we computed the analyses separately in a one- up to a five-dimensional solution. For these analyses, we included setting (public/private), interactant, emotion, and expressive mode responses. Then, we performed a generalized procrustes analysis (GPA; Borg & Groenen, 1997; Commandeur, 1991) on the one- up to five-dimensional solutions, but only taking into account the position of the expressive modes. The GPA translates, reflects, rotates, and shrinks/dilates the geometrical solutions in such a way that they maximally resemble one another. Moreover, it generates a general fit measure, namely, the proportion of the squared distances that are accounted for by a centroid (average) solution. This measure was .931, .709, .743, .834, and .983 for a one- up to a five-dimensional solution, indicating that only a one-dimensional solution was stable. In the two- and a three-dimensional solution, it was only the first dimension that was stable. With only six expressive modes, the four-dimensional solution becomes and the five-dimensional solution is trivial.

In the one-dimensional solution, there was one outlier, China; the centroid solution represented rather poorly the Chinese solution for both the male and the female samples (only 78% and 76% of the squared distances accounted for). For all other countries, at least one group (male or female persons) attained a fit of .90, and the fit was often above .95 (table of fit indices available from the first author). Eliminating China did not change the findings reported below; thus, we report the findings with China included.

We also examined in detail the two-dimensional solution to see whether there were systematic differences between samples on the second dimension. We applied a cluster analysis based on the quantification on the second dimensions; this, however, resulted in no interpretable structure.

We thus concluded that there was a highly stable dimension, which was equivalent across cultures. We thus recoded the nominal expressive mode responses into the following scalar values for analyses: Amplify $\rightarrow$ .5651, Express $\rightarrow$ .3842, Qualify $\rightarrow$ .1218, Deamplify $\rightarrow$ $-$.1545, Mask $\rightarrow$ $-$.3828, Neutralize $\rightarrow$ $-$.5338. We interpreted this dimension as a measure of overall expressivity, with one pole corresponding to not displaying anything and the other pole displaying more than one feels. To ease in the interpretation of these scores, .5338 was added to each, resulting in a score ranging from 0 (*express nothing*) to 1.0989 (*amplify*). The score therefore generally ranged from 0 to 1.[4]

*Intracultural variability of expression*. We computed two indices of intracultural variation. One was each country's standard deviation of the overall score (the marginal mean of all ratings) computed for each individual across all emotions, settings, and interactants; this score represented *interindividual variability*. The second was the country mean of each individual's within-person standard deviation for his or her ratings across emotions, settings, and interactants; this score represented *intraindividual variability*.

## RESULTS

### Hypothesis 1: Country and Cultural Differences on Overall Expressivity Norms

We first computed a five-way, mixed analysis of variance (ANOVA) using country, participant gender, all interactants (21), setting, and emotion as factors. As predicted, the
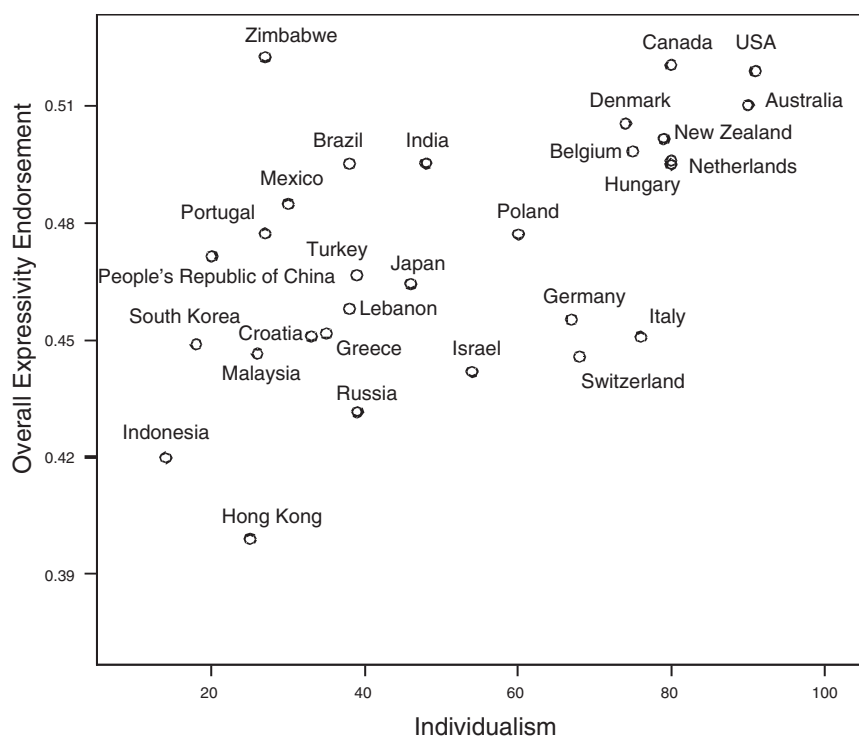
**Figure 1:    Graphical Representation of the Relationship Between Individualism-Collectivism and Overall Expressivity Endorsement**

NOTE: Much of this relationship is carried by the relationship between individualism with happiness and surprise.

country main effect was significant, $F(31, 5308) = 9.57$, $p < .001$, $\eta_p^2 = .05$. We thus computed country-level correlations between individualism and overall expressivity endorsement computed across all DRAI items. As hypothesized, individualism was positively correlated with higher expressivity norms (Figure 1).[5] Emotion-specific analyses, however, indicated that individualism was positively correlated only with expression norms for happiness and surprise (Table 2, left).

It was possible that the correlations with the specific emotions were confounded by the correlations with overall expressivity norms. Thus, we computed the correlations between culture and the specific emotions partialing the overall score. The findings were generally the same (Table 2, right). Individualism was positively correlated with happiness and surprise, and negatively correlated with sadness. Moreover, the correlations with the other negative emotions were also negative, albeit nonsignificant. These findings suggest, therefore, that the relationship between individualism and overall expressivity endorsement is primarily driven by greater expression endorsement of positive emotions.

## Hypothesis 2: Culture and Intracultural Variability in Expressivity Endorsement

Contrary to prediction, individualism was negatively correlated with interindividual variability and not correlated with intraindividual variability (Table 2). Neither Hypothesis 2a nor 2b, therefore, were supported.

| Emotion | Pearson Correlation | Partial Correlation Controlling for Overall Expressivity |
|---|---|---|
| Anger | .23 | −.19 |
| Contempt | .24 | −.12 |
| Disgust | .17 | −.18 |
| Fear | .03 | −.19 |
| Happiness | .57*** | .32* |
| Sadness | −.12 | −.33* |
| Surprise | .68*** | .49** |
| Overall expressivity endorsement | .55*** | |
| Interindividual variability | −.39* | −.34* |
| Intraindividual variability | −.10 | −.24 |

*$p < .05$. **$p < .01$. ***$p < .001$.

## Hypothesis 3: In-Group/Out-Group Differences in Expressivity Norms

Hypothesis 3 stated that regardless of culture, individuals will endorse the expression of emotions more toward in-groups relative to out-groups. We computed a five-way, mixed-model ANOVA using country, participant sex, interactant (in-group v. out-group), setting (public v. private), and emotion as independent variables. The interactant main effect was significant, $F(1, 5105) = 3,924.85$, $p < .001$, $\eta_p^2 = .44$, indicating that individuals had higher expressivity norms with in-groups than with out-groups and providing support for this hypothesis.

This interpretation was qualified by a significant interactant emotion interaction, $F(6, 30630) = 123.65$, $p < .001$, $\eta_p^2 = .024$. To decompose this effect, we computed the simple effects of interactant separately for each emotion (Table 3). Each was significant and associated with large effects, and indicating that the interaction reflected differences in degree but not direction. To gauge how large these effects were at the individual level, we computed the percentage of individuals for whom expressivity norms were larger in in-groups compared to out-groups, and vice versa. A much larger percentage of individuals rated expressivity norms higher in in-groups compared to out-groups across all emotions. These findings provided strong support for Hypothesis 3.

## Hypothesis 4: Cultural Differences in In-Group and Out-Group Expressivity Norms

The five-way ANOVA reported above yielded a significant Interactant × Country × Emotion interaction, $F(186, 30282) = 4.38$, $p < .001$, $\eta_p^2 = .03$. To decompose this effect, we computed Country × Interactant interaction contrasts separately for each emotion. All were significant, partial $\eta^2$s = .03, .03, .02, .05, .06, .11, and .06, for anger, contempt, disgust, fear, happiness, sadness, and surprise, respectively. We then computed the country means for each emotion, separately for in-groups and out-groups, and correlated these with the country-level scores on IC. As predicted, individualistic cultures were associated with higher expressivity norms for anger (marginally), contempt (marginally), and fear with in-groups, supporting Hypothesis 4a. The findings also indicated, however, that individualistic cultures were associated with higher

**TABLE 3**
**In-Group Versus Out-Group Differences in Expressivity Norms**

| Emotion | In-Group Mean | Out-Group Mean | Mean Difference $\eta_p^2$ | % Individuals In-Group > Out-Group | % Individuals Out-Group > In-Group |
|---|---|---|---|---|---|
| Anger | .576 | .381 | .29 | 66.78 | 19.15 |
| Contempt | .430 | .301 | .15 | 56.44 | 22.74 |
| Disgust | .416 | .287 | .16 | 56.76 | 22.35 |
| Fear | .452 | .273 | .26 | 61.34 | 17.78 |
| Happiness | .803 | .638 | .26 | 57.00 | 12.68 |
| Sadness | .639 | .406 | .38 | 69.58 | 14.66 |
| Surprise | .748 | .575 | .27 | 56.70 | 13.43 |

**TABLE 4**
**Correlations Between Individualism and Expressivity Norms**
**for In-Groups and Out-Groups Separately for Each Emotion**

| Interactant | Emotion | Pearson Correlation | Partial Correlation Controlling for Overall Expressivity |
|---|---|---|---|
| In-group | Anger | .26† | .10 |
| | Contempt | .25† | .02 |
| | Disgust | .22 | −.01 |
| | Fear | .31* | .24 |
| | Happiness | .50** | .32* |
| | Sadness | .12 | .04 |
| | Surprise | .75*** | .63*** |
| Out-group | Anger | .00 | −.43** |
| | Contempt | .01 | −.42** |
| | Disgust | −.07 | −.49** |
| | Fear | −.15 | −.33* |
| | Happiness | .63*** | .45** |
| | Sadness | −.19 | −.31* |
| | Surprise | .70*** | .55*** |
| Difference between in-group and out-group | Anger | .27† | .49** |
| | Contempt | .34* | .39* |
| | Disgust | .41** | .42** |
| | Fear | .42** | .52** |
| | Happiness | −.48** | −.33* |
| | Sadness | .36* | .39* |
| | Surprise | −.21 | −.06 |

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

expressivity norms for happiness and surprise with in-groups as well, contrary to Hypothesis 4b. Thus, it appeared that individualistic cultures were associated with higher expressivity norms in general with in-groups (Table 4).

As predicted in Hypothesis 4d, individualistic cultures were associated with higher expressivity norms of happiness and surprise with out-groups. Contrary to Hypothesis 4c, however, there were no cultural differences on the other emotions with out-groups (Table 4).

Because individualism was correlated with overall expressivity norms, we recomputed these correlations, partialing each country's overall expressivity mean. When overall expressivity differences were controlled, individualistic cultures endorsed more happiness

and surprise with in-groups than did the collectivistic cultures. With out-groups, however, individualistic cultures endorsed less of all of the negative emotions, and more happiness and surprise. Thus, Hypothesis 4c and 4d for out-groups were supported when overall expressivity was controlled.

### Hypothesis 5: Cultural Differences in In-Group Versus Out-Group Differences

To test the hypothesis that IC was related to country-level differences between in-group and out-group expressivity norms, we computed the difference between the country means for the in-group and out-group ratings (in-group–out-group), separately for each emotion, and then correlated the differences with each country's individualism score (bottom, Table 4). Individualism was positively correlated with the difference score for all negative emotions, indicating that individualistic cultures tended to endorse relatively more negative emotions toward in-groups compared to out-groups, as predicted. At the same time, individualism was negatively correlated with differences for happiness. These findings survived when overall expressivity was partialed and provided strong support for Hypotheses 5a and 5b.

### Post Hoc Analyses

In the overall analyses, the grand mean was .472, which, according to the nature of the recode procedures described earlier, reflected some degree of overall expressive regulation. A one-sample $t$ test comparing it with .918, the value for "Express the emotion as you feel it," was significant and associated with a very large effect size, $t(5055) = 248.81$, $p < .001$, Cohen's $d = 3.27$.

## DISCUSSION

### Universal Effects

The data in Table 1 indicated that, despite the larger potential range of scores, most countries' means on overall expression endorsement fell around the midpoint, and there was relatively small variation around this mean, suggesting a universal norm for expression regulation. In fact, the range of differences in country means was comparable to the amount of interindividual differences in those same means within countries; and the amount of intraindividual differences within each country appeared to be even larger than the differences between countries or individuals. Country differences accounted for approximately 5% of the variance in the data. These data characteristics provide a frame of reference with which to interpret the other results obtained.

Individuals of all cultures endorsed expressions toward in-groups more than toward out-groups. We predicted these findings by suggesting that all individuals in all societies make social differentiations according to the in-group/out-group distinction and alter their overall levels of expressivity accordingly by expressing emotions relatively more to in-groups compared to out-groups. The emotion specificity of these effects provides some hints as to how stability is maintained in groups. Contempt, disgust, and fear were the least endorsed emotions with both in-group and out-group interactants. These findings are commensurate with other studies that indicate that these emotions, particularly contempt and disgust, are disruptive to social relationships (Gottman & Levenson, 1992, 2000; Rozin, Lowery, Imada, & Haidt, 1999). Contempt and disgust were also associated with the smallest in-group

versus out-group differences. Fear and sadness did not have the same effects, indicating that distinguishing emotions simply by valence (positive-negative) could not account for these specific findings; specific emotions clearly have different social effects. In fact, of the negative emotions, sadness was associated with the greatest degree of endorsement toward in-groups, relative to out-groups. We believe that this finding is related to the fact that sadness signals distress (Izard, 1994), and the signaling of distress is a sign of vulnerability. In-groups allow individuals to express such vulnerability; signals of distress toward in-groups may be also interpreted as a call for help.

## Cultural Effects

As predicted, individualism was positively associated with higher expressivity norms in general, and for positive emotions in particular. One possible explanation of these findings is the fact that individualism is also positively correlated with country-level differences in personality traits, most notably extraversion (Hofstede & McCrae, 2004). Individuals higher in extraversion tend to be more expressive (McCrae & Costa, 1999), and if there are greater numbers of extroverts in a country, or a country's members have higher amounts of extraversion, this may contribute to overall expressivity endorsement differences we observed. Future research should investigate this possibility.

Contrary to prediction, individualism was negatively associated with interindividual variability in expressivity norms, indicating counterintuitively that greater freedom of emotional expression associated with individualistic cultures is associated with a smaller, not larger, bandwidth of expression possibilities for individuals in these cultures, resulting in smaller interindividual variability. One post hoc explanation of this finding is that the bandwidth is smaller precisely because individualistic cultures are associated with higher overall expressivity, which would require less variability in the regulation of display among individuals. Clearly this finding needs to be replicated and tested further.

Also contrary to prediction, IC was not associated with intraindividual variability, suggesting that cultures do not affect the *range* of responses within an individual across a wide range of contexts. It may very well be possible, however, that cultures are associated with the *types* of responses across context. Future studies examining the specific response alternatives of the DRAI may test for this possibility.

Individualism was associated with different emotion endorsement strategies in in-group and out-group situations. As predicted, individualism was positively associated with endorsement of expressions of negative emotions toward in-groups. However, individualism was also positively correlated with happiness and surprise. These findings indicated, therefore, a lack of emotion specificity in these relationships and that individualistic cultures endorse the expression of more emotions in general in in-groups. The findings with out-groups were different. Initially, individualism was not correlated with any of the negative emotions with out-groups. When overall expressivity endorsement was partialed, however, individualism was negatively correlated with all negative emotions, but positively correlated with happiness and surprise, as predicted.

Cumulatively, these findings suggest that the relationship between culture and expression endorsement varies as a function of emotion, interactant, and overall expressivity endorsement levels. On one hand, with in-group interactants, members of individualistic cultures endorse more emotion expression, whereas members of collectivistic cultures endorse less. Some of these differences are likely accounted for by overall differences in expression endorsement; when such differences are controlled, members of individualistic

cultures endorse more fear, happiness, and surprise only. On the other hand, with out-group members, differences in relative endorsement of expression exist only when overall expressivity endorsement differences are accounted for.

These differences were made clearer when we analyzed the difference between in-groups and out-groups. Here individualism was positively correlated with the difference for all negative emotions and negatively correlated for positive emotions. This was generally true regardless of whether overall expressivity endorsement was controlled and suggested that, as predicted, members of individualistic cultures endorsed relatively less expressions of negative emotions to out-group interactants relative to in-group interactants. They also endorsed more expressions of happiness and surprise to out-groups relative to in-groups. Thus, the predicted differences between individualistic and collectivistic cultures were more clearly obtained when differences within the cultures were observed.

### Limitations

This study was not conducted without limitation. Assessing display rules the way we did means that we can access only those rules that can be verbalized; this is a limiting factor because display rules can be preverbal and operate with minimal or no consciousness (Matsumoto & Lee, 1993). Also, merely asking about display rules might make unconscious display rules conscious but may also be subjected to biases for social desirability or cultural ideologies. This concern is mitigated slightly because we made a conscious effort to assess cultural norms of emotional display by asking respondents what they think they *should* do, not to self-report what they actually do. Yet, the data may be confounded by such biases.

Another limitation of the study concerned the nature of the scoring procedures. The nominal, repeated measures nature of the original raw data led us to use HOMALS, as described above, to reduce the data to a single dimension of expressivity. Doing so allowed us to examine the relationships we did in a very parsimonious way. But it probably produced some potentially artificial effects as well. For example, the fact that most countries' means fell around the midpoint of overall expressivity endorsement and that there was relatively small variation around this mean may have resulted from the scoring procedures, which may have hidden potentially important expressive differences among the countries that could have existed in the original nominal response categories. Thus, we interpret the dimension of expressivity that emerged as the lowest common denominator among the original expressive modes. It is only one way to understand the data, and we by no means believe that all of expression regulation data can or should be reduced to this single dimension. Future studies should examine the existence and utility of other dimensions that may underlie the responses, as well as examine the original expressive modes as categories. These other approaches should provide meaningful glimpses of the nature of expression regulation across cultures as well.

Another limitation of the study was the fact that we focused on IC. In doing so, we by no means intend to suggest that this is the only cultural dimension that exists or even that it is the most important dimension in relation to expression regulation. We do believe that IC is an important dimension and that use of it makes conceptual sense in understanding the difference between in-group and out-group relationships. Yet, many other cultural dimensions exist, and their influence and relationships with expression regulation need to be explored. Hierarchies, for instance, are another important aspect of social groups, and cultural dimensions related to hierarchies should be important in understanding emotion regulation differences as a function of the status levels of the interactants. Likewise,

cultural differences related to gender roles should be related to gender differences in expressivity norms. These and other aspects of culture should be examined in the future.

Another limitation concerned our classification of close friends as in-groups and acquaintances as out-groups. To be sure, these classifications can be fluid; acquaintances may be out-groups when compared to close friends, but in-groups when compared to people of other countries. Rivals one day in one context may be allies another day in another context. Thus, our findings may not reflect expressive norms for close friends as in-groups and acquaintances as out-groups per se, but for in-groups and out-groups, however defined. Also, it is entirely possible that effects for different categories of social relationships are carried by relationship quality; thus, our findings may reflect differences between close and not-so-close relationships. Further research is necessary to test specifically what kinds of relationship categories and constructs best account for expressive norms.

Finally, all respondents were university students. It is important to study other adult populations to determine the stability of the findings. This is precisely what some researchers have done, including Hofstede (2001), who studied business employees; Schwartz (1999; Schwartz & Bardi, 2001), who studied teachers as well as students; and McCrae (Allik & McCrae, 2004), who has studied student and nonstudent samples in his cross-cultural studies of personality. This may explain why Zimbabwe was an outlier in Figure 1. Their very high expression endorsement score may be driven by the university student sample obtained in the study, which may not be representative of the average citizen in this country.

## NOTES

1. There were significant age differences across the countries, $F(30, 5204) = 32.63$, $p < .001$. To examine whether country differences on age affected any of the results, we correlated mean age with the overall expressivity means, as well as all the culture data. Of the 15 correlations computed, none was statistically significant. Thus, we concluded that age differences did not confound any of the findings reported below.

2. Since the original data collection for this study, minor changes in wording of the instrument were made, which are reflected in the online version of the instrument.

3. By doing so, however, we certainly do not suggest that examination of each specific expressive mode is unwarranted. Indeed, they provide interesting information concerning the exact expression mechanics that may be at work when emotional expressions are regulated. Examination of all specific modes, however, would be cumbersome and beyond the scope of this article.

4. Although we use the data transformations provided by the homogeneity analysis via alternating least squares (HOMALS) in this article, we acknowledge that there are multiple ways of analyzing the Display Rule Assessment Inventory (DRAI) data. These would include using each of the nominal categories separately, as suggested by Matsumoto, Yoo, Hirayama, and Petrova (2005), as well as other theoretically meaningful and/or empirically derived methods. Furthermore, findings may be limited to the particular nature of the data transformations, and the findings presented here should be interpreted with this caveat. More information concerning the HOMALS procedure used here can be found at www.davidmatsumoto.info.

5. In all correlational analyses we computed both Pearson and Spearman correlations. They produced the same results; for parsimony, we present Pearson correlations.

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