

The contribution of individualism vs. collectivism to cross-national differences in display rules*

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Despite the fact that display rules are an important concept of theories of emotion and contemporary psychology, relatively little cross-cultural research has been done on them. This study examined cross-national differences in display rules of emotion, and investigated the degree to which those differences could be attributed to Individualism and Collectivism (IC) measured on the individual level. Participants in the US, Japan, South Korea, and Russia completed a comprehensive measure of display rules assessing behavioral tendencies for seven universal emotions in four social contexts in two rating domains. They also completed Matsumoto *et al.*'s (1997) Individualism–Collectivism Interpersonal Assessment Inventory. The results confirmed the existence of cross-national differences in IC and display rules, and indicated that IC and display rules were correlated. Significant differences between the countries remained even after IC was controlled for, and effect size analyses comparing cross-national differences when IC was controlled and not indicated that IC accounted for approximately 30% of the effect sizes related to cross-national differences. This study is unique in that it not only used the concept of IC to explain and predict differences; it also quantitatively assessed the degree to which IC contributed to those differences. These findings are discussed in terms of the utility of the IC concept to understanding cross-cultural and cross-national differences in emotion.

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Since their original inception (Ekman & Friesen, 1969), the concept of cultural display rules has become well established in contemporary psychology. These are learned rules that dictate the management of emotional expressions based on social circumstances. Their existence was supported in research almost 30 years ago comparing Americans and Japanese who viewed stressful films when alone, and at another time with a higher status experimenter (Ekman, 1972; Friesen, 1972). When alone, with no need for cultural display rules to operate, both Americans and Japanese produced similar facial expressions of disgust, anger, fear, and sadness; and, these corresponded to those expressions that earlier research suggested were universally recognized and expressed. With the experimenter, however, many Japanese smiled to mask their negative feelings, while the Americans continued to show their negative feelings. These differences occurred because the Japanese had a display rule to hide their negative feelings in that situation.

The concept of display rules is important in contemporary theories of emotion. In Ekman's neurocultural theory of emotional expression (Ekman, 1972), for example, innervation of an innate facial affect program, which stores the prototypes of the universal emotions, is tempered by display rules. Facial displays, therefore, are a combination of biologically innate, universal expressions and culturally learned rules for expression management. (Fridlund (1997) posited a similar role for display rules, while not relying on the assumption of universality.)

Since the documentation of the universality of emotion and the existence of display rules, much research emerged on emotion, particularly in the area of expression development and socialization. Some studies focused on infants (e.g., Malatesta & Haviland, 1982; Malatesta *et al.*, 1986), others on the development of display rule knowledge in children (Cole, 1985; Saarni, 1979, 1982, 1984). As a result, we know a great deal about the importance of display rules in socialization, and about how individuals come to learn about the importance of context in expressing emotions.

Despite the fact that the concept of display rules was born from cross-cultural research, it is ironic that no cross-cultural studies were conducted for almost two decades since their original inception and documentation. This is unfortunate, because cultural display rules are important parts of any culture, and information concerning them is important for knowledge to continue to grow in this area.

Recently, however, some studies have begun to address this void. Matsumoto (1990), for example, showed Americans and Japanese two examples of six universal emotions, and obtained ratings of the appropriateness of displaying each in eight social contexts (alone, in public, with close friends, family members, casual acquaintances, people of higher status, people of lower status, and children). Americans rated some negative emotions in in-groups, and happiness in out-groups more appropriate than did the Japanese. The Japanese, however, rated some negative emotions as more appropriate to out-group members. Using a similar methodology, Matsumoto and Hearn (1989; reported in Biehl *et al.*, in press) obtained display rule ratings from Americans, Poles, and Hungarians. Americans rated negative emotions more appropriate to display in in-groups than did Poles or Hungarians; the Poles and Hungarians rated happiness more appropriate in in-groups.

These studies were important because they were the first cross-cultural studies since Ekman's (1972) and Friesen's (1972) on the concept of display rules. They also extended those findings by obtaining display rule ratings across a range of emotions and contexts, and tested a theory that postulated display rule differences according to culture and social context (see Matsumoto, 1990, 1991). While cultural display rules explained the mechanics of how cultural contents can affect biologically innate aspects of emotional expression, they

gave us little information about the hows and whys of cultural influences on expression beyond the mechanics.

There were, however, two limitations to these studies concerning the definition and measurement of both culture and display rules.

Defining and measuring culture

In cross-cultural research, culture is usually operationalized by country. Despite the fact that we measure this way, we discuss culture and its influence on behavior from a functional, sociopsychological perspective. We speak of the degree to which cultures are individualistic or collectivistic, status differentiating, contextualized, tight or loose, and so on. We speak of rituals, customs, and habits, and about subjective (Triandis, 1972) elements of culture, including attitudes, opinions, beliefs, behaviors, and values. When we operationalize culture by country but speak about it in this fashion, there is a discrepancy between how we discuss it and how we measure it. Frankly, we assume that these subjective elements of culture underlie the countries in our studies, but we rarely if ever empirically ascertain that they truly exist and influence behavior in the ways we suggest.

A number of writers, however, has made major inroads to this limitation, first through the identification of meaningful dimensions of cultural variability, and second through the development of individual level assessment techniques of them. The most commonly used dimension is known as Individualism vs. Collectivism (IC). Individualistic cultures foster a sense of autonomy and uniqueness, emphasizing individual needs, wishes, and desires over collective concerns. Collectivistic cultures foster group harmony, cohesion, and cooperation, emphasizing groups over individuals. This construct has been used by many, most notably Triandis (see review in Triandis, 1995) to explain cultural differences in a wide variety of psychological phenomena.

In fact, IC has been used quite extensively to explain cultural differences in emotion and display rules. Ekman (1972) and Friesen (1972) suggested that the Japanese participants in their study smiled in the presence of the experimenter because the Japanese emphasize harmony and the preservation of status differences more than do Americans; these are typically collectivistic traits. That Americans rated negative emotions with in-groups and positive emotions with out-groups more appropriately than did the Japanese was interpreted by Matsumoto (1990) as related to IC differences between the countries. That is, Japanese collectivism would discourage negative emotions and encourage positive ones in in-groups to maintain group harmony and cohesion; likewise, Japanese collectivism would discourage positive emotions and encourage negative ones to out-groups to distance themselves from out-groups, a characteristic of self-out-group relationships in collectivistic cultures (Triandis *et al.*, 1988). The same pattern of results between the Americans, Poles, and Hungarians were interpreted similarly by Matsumoto & Hearn (1989).

IC has also been used to explain cross-national differences in emotion judgments. Matsumoto (1989, 1992) showed that individualism was positively correlated with greater accuracy rates of recognition of negative emotions such as anger and fear. Collectivism was correlated with lower intensity ratings of these same emotions. These findings, in addition to those given above, collectively paint a solid picture of the contribution of IC to cultural differences in emotion.

Triandis and his colleagues have gone beyond the mere identification of IC to develop ways of measuring it. On the individual level, IC tendencies are referred to as idiocentrism and allocentrism, respectively (Triandis *et al.*, 1985). Triandis (1995) views IC as a

syndrome, cutting across a variety of psychological phenomena including attitudes, values, beliefs, and the like. Consequently, his multi-method assessment technique measures IC tendencies across these various psychological constructs. Other assessment techniques also exist, such as Hui's (1984, 1988) context-specific measure of collectivism, and Yamaguchi's (1994) multi-domain measurement of collectivism.

More recently, Matsumoto and his colleagues developed a measure of IC specific to social interaction (Matsumoto *et al.*, 1997), which was used in this study. Termed the Individualism and Collectivism Interpersonal Assessment Inventory (ICIAI), participants rate the degree of importance of 25 IC-related behavioral, attitudinal, and value tendencies with regard to four social relationships: family members, close friends, work colleagues, and strangers in two ratings domains (values and behaviors) using 7-point scales. The 25 items can be scored into four scales: Social Harmony (SH), Social Identification (SI), Self-Control (SC), and Social Sharing of Recognition (SSR). Scores, therefore, can be generated for each scale (across contexts), and for each relationship (across scales). Differences between the scales reflect different aspects of the IC construct, while differences between the relationships reflect differential IC-mediated self-in-group and out-group tendencies (see Triandis *et al.*, 1988). As scales and relationships give different information, it is important to examine them both when using this measure.

Measurement techniques of IC are major pluses for cross-cultural research because they allow researchers to demonstrate empirically that participants differ (or not) on this construct. Researchers need not rely on assumption, impression, anecdote, or stereotype in conducting studies or interpreting data, as measurement provides a methodological check on intended cultural operations. Moreover, measurement allows for an assessment of the relationship between individual level culture and the dependent variables. If such relationships exist, researchers can then quantitatively assess the degree to which individual culture contributes to the difference between the countries (e.g., through comparisons of effect sizes). Thus, researchers can ask not only whether or not constructs such as IC contribute to cross-national differences in variables such as display rules, but also *how much*. While IC has been used to explain differences in a variety of phenomena, including emotion and display rules, no study has examined exactly how much IC contributes to these variables. This issue is addressed in this study.

Defining and measuring display rules

In Ekman's (1972) and Friesen's (1972) original display rule study, display rules *per se* were never measured. Actual facial responses were measured, and differences between the two cultures were interpreted as existing because of assumed display rule differences between the two cultures. That is, display rules were a theoretical, not empirical, construct.

Matsumoto's two later cross-cultural studies of display rules (Matsumoto, 1990; Matsumoto & Hearn, 1989) attempted to measure display rules directly, and did so via ratings of the appropriateness of displaying facial expressions in various social contexts. While these studies were a step in the right direction, elevating display rules from a theoretical construct to an empirical one, they were nevertheless limited in the sense that such appropriateness ratings do not capture fully the behavioral repertoire accessed by display rules.

Indeed, display rules may dictate several types of modification, depending on learning and social circumstance, such as:

- *Amplification*: expressing an emotion more intensely than what is truly felt;
- *Deamplification*: expressing an emotion less intensely than what is truly felt;
- *Neutralization*: displaying nothing;
- *Masking*: displaying some other emotion than what is truly felt;
- *Qualification*: displaying an emotion with another, either blended simultaneously or occurring sequentially in time, to qualify or comment on one's emotion;
- *Unmodified expression*: displaying an emotion as felt, with no modification.

Thus, a truer assessment of display rules would allow participants to select which of these possible responses, or others, they would engage in if they felt an emotion in different social contexts. This is exactly how display rules were assessed in this study.

Overview of this study

Participants from four countries – the US, Japan, Korea, and Russia – completed Matsumoto *et al.*'s (1997) ICAI, and assessed their display rules of seven emotions in the same contexts. This design allowed for a cross-national comparison of both the IC tendencies of the four countries, and the display rule differences among them when emotion is aroused. This study is unique in that display rules were assessed comprehensively across the behavioral repertoire described above. In addition, the individual level measurement of IC allowed us to examine directly and quantify the degree to which IC as a cultural construct contributes to the cross-national differences in display rules. We tested the following hypotheses:

Hypothesis 1: That there would be cross-national differences in IC.

Hypothesis 2: That there would be cross-national differences in display rules.

Hypothesis 3: That individual level IC would be correlated with display rules across all four countries.

Hypothesis 4: That IC would account for a majority of the variance in cross-national differences in display rules.

Method

Participants

The participants included 71 South Koreans, 251 Americans, 159 Russians, and 120 Japanese. All were undergraduates at large universities in major urban areas in their respective countries (Seoul, San Francisco, Moscow, and Osaka), and participated voluntarily or in partial fulfillment of class requirements. All were born and raised in their respective countries, and each country's language was their first and primary language used. Male/female ratio was approximately evenly split in all four samples (36/35, 134/117, 77/82, and 60/60, respectively). There were demographic differences between the four samples. The Americans and Russians tended to be older than the Koreans and Japanese (means = 25.30 and 26.21 vs. 21.90 and 19.08, respectively), and more diverse in religious background, marital status, and employment. Americans were the most diverse in terms of ethnicity and socioeconomic status, and Americans and Japanese tended to have higher socioeconomic status than the Koreans and Russians. These demographic differences,

however, did not affect either the culture or the display rule ratings (reported in detail below).

Instruments

Individualism-collectivism. Participants completed Matsumoto *et al.*'s (1997) ICIAI. They first completed ratings as values, defined as "concepts or beliefs about desirable outcomes or behaviors that guide our selection of behaviors and evaluation of events," using a 7-point scale ranging from 0, Not Important at All, to 6, Very Important. They then completed the same ratings as self-reported behaviors (i.e., how often they actually engage in those behaviors) using a 7-point scale ranging from 0, Never, to 6, All the Time. A cover sheet briefly described the four relationships, and participants were instructed not to be too concerned with specific individuals within these groups, but to respond instead to each as a general category.

The ICIAI was translated into Korean, Russian, and Japanese. Accuracy of the translation was verified using back translation procedures with no problems. Scores were created separately for each of the four scales described above, and for the four social relationships.

Display rules. In order to assess display rules on the individual level, we constructed the Display Rule Assessment Inventory (DRAI). Participants were given a list of four social relationships, 14 emotion terms, and seven behavioral response alternatives, and were asked to select a response alternative based on the premise that they felt each emotion toward a person in each of the four social categories when interacting with that person. For equivalence with the ICIAI, the same four social relationships were used. The 14 emotion terms were selected to operationalize each of the seven emotions thought to be universally expressed in the face: anger, contempt, disgust, fear, happiness, sadness, and surprise (see Ekman, 1972; Ekman & Friesen, 1986) along with a synonym for internal reliability: hostility, defiance, aversion, worry, joy, gloom, and shock, respectively. The order of the emotion terms was randomized. The seven response alternatives were constructed based on a theoretical range of possible behavioral responses that could occur given the emotion felt and the context information:

1. Express the feeling as is with no inhibitions (Express).
2. Express the feeling, but with less intensity than one's true feelings (Deamplify).
3. Express the feeling, but with more intensity than one's true feelings (Amplify).
4. Try to remain neutral; express nothing (Neutralize).
5. Express the feeling, but together with a smile to qualify one's feelings (Qualify).
6. Smile only, with no trace of anything else, in order to hide one's true feelings (Mask).
7. Some other response (Other).

Participants completed their ratings in two domains: as a social value (i.e., what they believe people should do), and as self-reported behavior (i.e., what they themselves actually do). The DRAI was originally constructed in English and translated into the other three languages. Accuracy of the translation was verified using back translation procedures. There were no problems in the translation or back translation, and pilot work using the translated measures in each of the three non-English countries suggested equivalence in the measures.

Procedures

All participants were recruited in classrooms, and were provided first with a basic demographic questionnaire and the ICIAI. They were allowed to complete these measures either in class or at their leisure outside of class, with the stipulation that they work alone and in a single setting. Those who completed their questionnaires outside of class brought them back the following class. In order to minimize correlations due to proximity of collection, the DRAI data were collected approximately two months later. Only individuals who provided complete data on both questionnaires were included in this study.

DRAI scoring

Because the use of nominal response alternatives was not amenable to a factorial, repeated measures design, we examined the possibility that interval scores could be derived via Multidimensional Scaling (MDS) of the data. We presented all pairings of the seven response alternatives to a separate sample of 98 Americans and 56 Japanese undergraduates, who rated the similarity of the pairs using a 7-point scale labeled 0, Not at All Similar, to 6, Totally Similar. The similarity matrices were then subjected to SPSS ALSCAL, separately for the Japanese and the Americans. A single dimension adequately summarized the ratings in both analyses, and the ordering of the response categories was exactly the same for both countries: Express, Amplify, Deamplify, Qualify, Mask, Other, and Neutralize. The correlation between the US and Japan on the scale values for each of the seven responses was .9764. We interpreted this dimension as "Control." Based on these results, we then converted all nominal data in the main study for all participants to each response alternative's scale score, based on the MDS of the American similarity ratings.

Results

Hypothesis 1: Country differences on the ICIAI

Main analyses. A five-way Analysis of Variance (ANOVA) was computed on the ICIAI scale scores, using country (4) and gender (2) as between-subject factors, and rating domain (2), social relationship (4), and scale (4) as within-subject factors. Although a number of effects were significant, the culture main effect indicated that cultural response sets may have been operating to confound the results, $F(3, 590) = 40.27, p < .001$. To address this problem, we standardized each participant's ratings to the mean and standard deviation across all 200 items for his or her respective country, and then recomputed the five-way ANOVA. While standardization of the data eliminates overall cultural differences (i.e., main effects), it preserves differences on within-subject variables in a multi-factor design, and allows for cross-national comparisons on these factors (Matsumoto, 1994).

The two largest effects involving the country factor were the country by social relationships interaction, and the country by scale interaction, $F(9, 1176) = 39.45, p < .001$, and $F(9, 1176) = 25.32, p < .001$, respectively. We thus tested country simple effects, separately for each relationship and then scale. Significant effects were followed by Tukey pairwise comparisons.

Table 1 Results of simple effects analysis of country separately for each social relationship and scale on ICAI data, and summary results of Tukey pairwise comparisons

Social relationship	Korea	US	Russia	Japan	F	Tukey
Family	1.35 (1.42)	.96 (1.47)	1.31 (1.30)	-.44 (1.45)	40.67***	K, R, U > J
Close friends	.90 (1.12)	.59 (1.22)	.91 (1.23)	.27 (1.26)	6.99	K, R > J
Colleagues	-.07 (1.09)	-.13 (1.24)	.02 (1.21)	-.01 (1.22)	.43	
Strangers	-1.92 (1.14)	-2.25 (1.47)	-2.25 (1.55)	-1.20 (1.23)	15.07***	J > K, U, R
Social harmony	.07 (1.06)	.96 (.99)	.15 (1.07)	.60 (1.02)	18.81***	U > J > R, K
Social identification	.06 (1.39)	-1.63 (1.76)	-.36 (1.47)	-.63 (1.36)	25.19***	K, R, J > U K > J
Self-control	.88 (1.18)	1.17 (1.55)	1.35 (1.45)	.38 (1.25)	11.90***	R, U > J
Social sharing of recognition	-.73 (1.12)	-1.28 (1.75)	-1.18 (1.36)	-1.74 (1.29)	7.79***	K > U, J R > J

*** $p < .001$

Note: All dfs = 3,590

K = Korea, U = US, R = Russia, J = Japan.

Russians and Koreans had more collectivistic scores with family and close friends than did the Japanese. Even Americans had more collectivistic scores with family than did the Japanese. While there were no differences for colleagues, the Japanese, in turn, had higher scores with strangers than did Koreans, Americans, and Russians. Higher scores with strangers are indicative of more individualistic tendencies, as self-out group relationships in individualistic cultures are less distancing than in collectivistic cultures (e.g., see Triandis *et al.*, 1988). Thus, this result is consistent with the results for family and close friends.

On the scales, Americans scored higher on Social Harmony than did the Japanese who, in turn, scored higher than Russians and Koreans. Koreans, Russians, and Japanese, however, scored higher on Social Identification than did the Americans. Russians and Americans scored higher on Self-Control than did Japanese, while Koreans scored higher on Social Sharing of Recognition than did Americans and Japanese. The Russians also scored higher than the Japanese on this scale.

The three-way interaction between country, scale, and social relationship was also significant, $F(27, 3528) = 11.73$, $p < .001$. Simple effects of country were examined separately for each scale and social relationship, with Tukey pairwise follow-ups. The pattern of results across the 16 analyses produced basically the same findings as those following the significant two ways reported above, with minor differences.

Other analyses. The gender main effect was significant, $F(1, 593) = 4.25$, $p < .05$, indicating that females had higher (i.e., more collectivistic) scores than did males. A significant country by

gender interaction, $F(3, 593) = 3.02, p < .05$, however, tempered this finding. Simple effects analyses indicated that females had more collectivistic scores than did males in only the US and Russia: $F(1, 593) = 5.07, p < .05$; and $F(1, 593) = 12.83, p < .001$, respectively.

Hypothesis 2: Country Differences on the DRAI

Main analyses. DRAI scale scores were averaged for each pair of synonyms within each emotion, and a five-way ANOVA was computed on these scores, using country (4) and gender (2) as between-subject factors, and rating domain (2), social relationship (4), and emotion (7) as within-subject factors. The country main effect was significant, $F(3, 568) = 43.37, p < .001$, and Tukey pairwise follow-ups indicated that Russians generally had significantly higher scores than Japanese and Koreans who, in turn, had significantly higher scores than Americans (higher scores represent more control over their expressions). (Standardization of the data in this case is not warranted because scores are derived from scale values associated with the MDS procedure, which already places the nominal categories on a standardized dimension.) Exactly the same pairwise results were obtained separately for both rating domains following the significant country by rating domain interaction, $F(3, 568) = 35.16, p < .001$, and for family, close friends, and colleagues following the significant country by social relationships interaction, $F(9, 1404) = 113.78, p < .001$. For strangers, however, the only significant pairwise difference was that Koreans had significantly higher DRAI scores than Russians.

The country, social relationship, and emotion interaction was significant, $F(117, 18,252) = 8.11, p < .001$, and pairwise differences between the countries were tested separately for each social relationship and emotion (Table 2). The results for all emotions for family and friends were essentially the same as those reported above: Russians had higher scores than Japanese and Koreans who, in turn, had higher scores than Americans. Russians continued to have higher scores than all three other countries for all emotions with colleagues; there were, however, considerably fewer differences between the remaining three countries. For strangers, Americans tended to have higher scores than Russians on anger, contempt, and disgust, and lower scores than all three other countries on happiness. Russians had lower scores than all three other countries on sadness, while Japanese had higher scores than Americans on surprise. Koreans had higher scores than Japanese on fear.

Other analyses. Neither the gender main effect, nor the country by gender interaction, was significant. The gender by social relationship interaction, however, was significant, $F(3, 1404) = 6.85, p < .001$; simple effects analyses of gender indicated that females had lower scores (i.e., exerted less control) with family than did males. In addition, the gender by emotion interaction was significant, $F(13, 6084) = 9.55, p < .001$; simple effects analyses indicated that females exerted more control than males on anger, contempt, and disgust, while males exerted more control than females on fear and surprise: $F(1, 503) = 5.05, p < .05$; $F(1, 501) = 8.32, p < .01$; $F(1, 501) = 6.18, p < .05$; $F(1, 506) = 15.20, p < .001$; and $F(1, 508) = 21.80, p < .001$, respectively.

Hypothesis 3: Correlations between display rules and individual level culture

Pearson product moment correlations were computed between the ICIAI and DRAI scores in several ways. First, the correlations were computed separately for social relationships, emotions,

Table 2 Results of simple effects analysis of country separately for each social relationship and emotion on DRAI data, and summary results of Tukey pairwise comparisons

Social relationship	Emotion	Korea	US	Russia	Japan	F	Tukey
Family	Anger	-.36 (.50)	-.62 (.60)	.20 (.58)	-.29 (.68)	25.75***	R > K = J > U
	Contempt	-.03 (.65)	-.51 (.68)	.54 (.68)	-.36 (.67)	44.43***	R > K > U = J
	Disgust	-.17 (.70)	-.53 (.68)	.42 (.94)	-.48 (.66)	39.06***	R > K > U = J
	Fear	-.82 (.54)	-.85 (.64)	-.17 (.89)	-.41 (.72)	20.13***	R > J > U = K
	Happiness	.35 (.04)	.47 (.04)	.58 (.05)	.60 (.05)	5.38**	R = J > U = K
	Sadness	-.65 (.56)	-.89 (.57)	-.22 (.67)	-.45 (.66)	15.85***	R > J = K > U
	Surprise	-.85 (.57)	-1.13 (.48)	-.47 (.82)	-.75 (.62)	16.15***	R > J = K > U
Close friends	Anger	-.27 (.45)	-.48 (.55)	.16 (.68)	-.04 (.55)	15.94***	R > J > U = K
	Contempt	-.06 (.60)	-.45 (.60)	.36 (.68)	.05 (.62)	23.83***	R > J = K > U
	Disgust	-.06 (.69)	-.46 (.61)	.28 (.76)	-.07 (.63)	.05	R > K = J > U
	Fear	-.73 (.51)	-.79 (.61)	.00 (.84)	-.44 (.60)	25.42***	R > J > U = K
	Happiness	-1.17 (.32)	-1.25 (.40)	-.89 (.53)	-1.09 (.51)	4.98**	R > J > U = K
	Sadness	-1.46 (.40)	-1.46 (1.16)	-1.18 (1.16)	-1.46 (1.16)	19.53***	R > U = J = K
	Surprise	-.78 (.55)	-1.08 (.49)	-.39 (.82)	-.83 (.51)	17.33***	R > J = K > U

Colleagues	Anger	.42 (.50)	.31 (.58)	.53 (.58)	.31 (.53)	2.24	R > U = J
	Contempt	.46 (.45)	.30 (.65)	.50 (.62)	.33 (.60)	1.81	R > U
	Disgust	.41 (.43)	.32 (.61)	.50 (.82)	.20 (.63)	2.93*	R > J
	Fear	.21 (.49)	.09 (.65)	.53 (.85)	.04 (.57)	9.66***	R > J = K > U
	Happiness	-.47 (.56)	-.84 (.60)	-.31 (.56)	-.61 (.65)	10.54***	R > J = K > U
	Sadness	.21 (.53)	.21 (.63)	.38 (.62)	.14 (.58)	2.00	R > J
	Surprise	.00 (.82)	-.37 (.63)	.20 (.76)	-.28 (.62)	13.39***	R = K > U = J
	Strangers	Anger	.49 (.95)	.49 (.69)	.23 (.82)	.48 (.61)	3.15*
Contempt		.33 (.83)	.53 (.71)	.27 (.87)	.52 (.60)	3.11*	U = J > R
Disgust		.46 (.94)	.51 (.72)	.24 (1.00)	.47 (.61)	2.98*	U > R
Fear		.87 (.95)	.65 (.65)	.68 (.88)	.55 (.57)	2.12	K > J
Happiness		-.34 (1.16)	-.32 (.88)	-.05 (.72)	.16 (.75)	12.45***	J = R > K > U
Sadness		.85 (.91)	.64 (.66)	.31 (.70)	.66 (.48)	8.07***	K = J = U > R
Surprise		.41 (.88)	.12 (.75)	.28 (.85)	.42 (.61)	3.41*	J = U

*** p < .001

Note: All dfs = 3,1170

K = Korea, U = US, R = Russia, J = Japan.

and scales, using the scores specific to each relationship from all participants and collapsing across rating domain (Table 3). The results indicated a considerable number of significant correlations. The correlations were generally positive for anger, contempt, and disgust, and negative for fear, happiness, sadness, and surprise, indicating that allocentric individuals exerted greater control over their displays of the former but less control over the latter.

The correlations were also computed using averages of either ICIAI scale scores across social relationships, DRAI scores across relationships, and both. All correlational analyses were also computed separately for each country. The results were comparable to those

Table 3 Correlations between ICIAI and DRAI scores, separately for each social relationship and scale, collapsed across rating domains

Emotion	Social relationship	Family	Close friends	Colleagues	Strangers
Anger	Social harmony	.17***	-.01	.10*	.05
	Social identification	.19***	.06	.10*	-.07
	Self-control	.24***	.12**	.21***	.15**
	Social sharing of recognition	.17***	.05	.16**	.00
Contempt	Social harmony	.18***	.05	.14**	.12*
	Social identification	.25***	.16**	.15**	.00
	Self-control	.28***	.19***	.21***	.15**
	Social sharing of recognition	.20***	.09	.15**	.05
Disgust	Social harmony	.16**	.05	.15**	.14**
	Social identification	.19***	.14**	.07	-.03
	Self-control	.25***	.17***	.22***	.12*
	Social sharing of recognition	.19***	.12*	.13**	.04
Fear	Social harmony	-.16**	.07	.01	-.10*
	Social identification	-.11*	.11*	.09	-.06
	Self-control	.06	.13**	.07	-.03
	Social sharing of recognition	-.15**	.06	.09	-.02
Happiness	Social harmony	-.24***	-.138	-.13**	-.15**
	Social identification	-.11*	.06	.09	.02
	Self-control	.00	.08	.00	-.04
	Social sharing of recognition	-.16**	-.03	.02	-.08
Sadness	Social harmony	-.13**	-.08	.03	-.11*
	Social identification	-.01	.11*	.06	-.09
	Self-control	.10*	.11*	.16**	-.03
	Social sharing of recognition	-.04	.08	.04	-.13**
Surprise	Social harmony	-.16**	-.13**	-.04	-.13**
	Social identification	.00	.15**	.16**	.00
	Self-control	.10*	.10*	.02	-.08
	Social sharing of recognition	-.08	.03	.11*	-.05

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

presented above across all analyses, providing strong evidence for the existence of individual level correlations between IC tendencies and display rule ratings.

Hypothesis 4: The contribution of individual level culture to the cross-national differences in display rules

Main analyses. In order to examine the degree to which individual level culture contributes to cross-national differences in display rules, we recomputed several of the country difference analyses on DRAI with Analysis of Covariance (ANACOVA), using four ICIAI scale scores averaged across social relationship and rating domain as covariates. Based on these findings, we then compared the country effect sizes (R^2) generated in the ANOVA analyses with those generated in the ANACOVAs. These comparisons allowed us to estimate the degree to which individual level culture contributed to the original cross-national differences observed.

Based on the significant main effect for country in the original ANOVA, we computed an ANACOVA on the DRAI scores, collapsing across emotion, social relationship, and rating domain, using country as the independent variable, and the four ICIAI scale scores as covariates. The country effect was still significant, indicating that countries still differed in their display rules, despite the fact that IC scores were controlled for, $F(3, 361) = 19.50, p < .001$. The country effect size from the original ANOVA was .21; from the ANACOVA, it was .13. The difference in effect size, therefore, was .08. We interpreted the ratio of this difference to the original effect size to reflect the degree to which individual level culture accounted for the original between country differences, which in this case was 38.1%.

Likewise, we recomputed the simple effects of country on the DRAI scores using ANACOVA, separately for both rating domains. Again, both F s were still significant, indicating that countries still differed in their display rules despite the fact that IC scores were controlled for, $F(3, 442) = 25.86, p < .001$; and $F(3, 378) = 12.89, p < .001$, for values and behaviors, respectively. For values, the original country effect size was .20; from the ANACOVA, it was .14; thus, 30.1% of the original effect size was accounted for by ICIAI scores. For behaviors, the original country effect size was .14; from the ANACOVA, it was .08; thus, 42.9% of the original effect size in these ratings was accounted for by ICIAI scores.

In similar fashion, we recomputed the simple effects of country on the DRAI scores, separately for each of the four social relationships. All F s were again still significant, $F(3, 391) = 55.79, p < .001$; $F(3, 387) = 44.80, p < .001$; $F(3, 391) = 12.37, p < 0.001$; and $F(3, 380) = 3.59, p < .05$, for family, friends, colleagues, and strangers, respectively. The ICIAI scores accounted for 15.6%, 25.0%, 33.3%, and 90.0% of the country effect sizes in the original ANOVAs for family, close friends, colleagues, and strangers, respectively.

We also recomputed the simple effects of country on the DRAI scores separately for each of the seven emotions. All F s were again still significant, $F(3, 380) = 11.07, p < .001$; $F(3, 379) = 8.17, p < .001$; $F(3, 377) = 6.01, p < .001$; $F(3, 383) = 11.97, p < .001$; $F(3, 381) = 10.60, p < .001$; $F(3, 380) = 6.51, p < .001$; and $F(3, 383) = 11.03, p < .001$, for anger, contempt, disgust, fear, happiness, sadness, and surprise, respectively. The ICIAI scores accounted for 27.3%, 53.8%, 55.6%, 33.3%, 36.4%, 28.6%, and 46.0% of the country effect sizes in the original ANOVAs for each respective emotion.

Finally, we recomputed the simple effects of country on the DRAI scores, separately for each emotion and social relationship (Table 4). Almost all the F s were still statistically significant. The ICIAI scores accounted for a range of original country effect sizes from a low of 0% to a high of 50%.

Table 4. Comparisons of country effect sizes on DRAI data from original ANOVAs and ANACOVAs controlling for ICIAI scores

Social relationship	Emotion	Country main effect <i>F</i> from the ANACOVA	Country effect size from ANACOVA	Country effect size from original ANOVA	Percent of country effect size attributable to ICIAI scores
Family	Anger	36.94***	.20	.25	20.0
	Contempt	40.91***	.21	.30	30.0
	Disgust	16.70***	.15	.23	34.8
	Fear	22.91***	.14	.14	0
	Happiness	12.79***	.08	.08	0
	Sadness	22.07***	.13	.16	18.8
	Surprise	17.13***	.10	.15	33.0
Close friends	Anger	22.63***	.14	.17	11.8
	Contempt	18.94***	.12	.21	42.9
	Disgust	13.29***	.09	.16	43.8
	Fear	25.89***	.16	.20	20.0
	Happiness	12.38***	.08	.09	11.1
	Sadness	27.65***	.17	.20	15.0
	Surprise	16.71***	.10	.17	41.2
Colleagues	Anger	2.92*	.02	.03	33.3
	Contempt	1.28	.01	.02	50.0
	Disgust	2.35	.02	.03	33.3
	Fear	11.44***	.08	.08	0
	Happiness	12.62***	.08	.12	33.3
	Sadness	2.07	.01	.02	50.0
	Surprise	1.98***	.07	.11	36.4
Strangers	Anger	2.34	.02	.02	0
	Contempt	2.84*	.02	.02	0
	Disgust	2.29	.02	.02	0
	Fear	1.64	.01	.02	50.0
	Happiness	9.66***	.07	.07	0
	Sadness	10.39***	.07	.07	0
	Surprise	3.79*	.03	.02	N/A

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

Other analyses. That gender differences on both ICIAI and DRAI scores were significant suggested the possibility that individual level culture may account for the gender differences on the DRAI. We examined this possibility by testing the simple effects of gender on the DRAI, separately for each emotion, using an aggregate IC score as a covariate (a composite average across all items of the ICIAI for each participant). The *F*s for gender on anger, contempt, and disgust were all not significant, indicating that IC differences between genders accounted for a significant portion of the variance on display rules between males and females for these emotions, $F(1, 593) = 1.13, 1.87, \text{ and } 1.95$, respectively. The *F*s on the other four emotions, however, were still all strong and significant, $F(1, 593) = 36.73, p < .001$; $F(1, 593) = 9.40, p < .01$; $F(1, 593) = 6.98, p < .01$; and $F(1, 593) = 38.48, p < .001$,

for fear, happiness, sadness, and surprise, respectively. Moreover, the effect size analyses for these emotions indicated that IC accounted for an average of 0% of the variance in DRAI ratings for these emotions.

Demographic correlates of ICIAI and DRAI scores

We engaged in a number of different analyses to assess the possibility that demographic differences may have confounded the country differences on either the ICIAI or DRAI. First, we correlated the ICIAI scores with self-reported age, socioeconomic status, economic status of household raised, and number of hours currently working. Of the 128 correlations computed (two rating domains \times four social relationships \times four scales \times four demographic variables), only eight were significant. We also computed ANOVAs on each of the four composite scale scores of the ICIAI, using marital status (single, married, divorced), occupation (blue collar, white collar, unemployed), household living situation (friends, family, room-mate, significant other), ethnicity (Caucasian vs. non-Caucasian; US data only), and religion (Christian vs. non-Christian-based). Of the 20 analyses, none was significant. The same analyses were computed on the DRAI data and produced the same results. We interpreted these findings as indicating that these demographic variables did not contribute to the country differences reported above.

Discussion

The findings supported Hypothesis 1, indicating considerable country differences on IC. For three of the four social relationships, Russians and Koreans were the most collectivistic, while the Japanese were the least. That the Japanese were the least collectivistic, especially compared to Americans, flies in the face of stereotypes of the Japanese culture. This finding is not, however, inconsistent with changes that have occurred in Japanese culture over the past 20 years, and commented on by writers both inside and outside of Japan (e.g., Ishi-Kuntz, 1989; Matsumoto, in preparation; Matsumoto *et al.*, 1996). This finding is also influenced by the fact that all the participants were university undergraduates, and in Japan, this is commonly known to be a time of divergence from social norms and customs prior to graduation and reinfusion into society via the workforce.

The findings on Hypothesis 1 also indicated cross-national differences on the four ICIAI scales. Americans and Japanese had the highest scores on Social Harmony, while Americans and Russians scored highly on Self-Control. Koreans and Russians had the highest scores on Social Identification and Social Sharing of Recognition. These replicate previous findings (Triandis, 1995; Triandis *et al.*, 1986) which suggest that IC is not a unitary or simple bipolar construct. The use of different scales may lead to different findings, and it is important to take into account the specific aspect or scale when discussing IC differences between cultures.

The findings supported Hypothesis 2, indicating considerable cross-national differences in display rule ratings. Russians appeared to rate their expressions with the greatest amount of control for all emotions with family, friends, and colleagues. Americans, however, had higher control ratings for their emotions with strangers. This pattern of findings is related to those obtained for the IC scores. That Russians would exert more control over their emotional displays is indicative of a more collectivistic culture, as it is more important to maintain harmony and cohesion in self-in group relationships than in self-out group

relationships in collectivistic cultures (Triandis *et al.*, 1988). That Americans tended to exert more control in their emotional displays toward strangers, especially their negative emotions, is also related to the American culture's emphasis on autonomy and uniqueness, which views individuals as just as important as groups.

The correlational analyses reported for Hypothesis 3 clearly lend support to some of these notions. Positive correlations were found for anger, contempt, and disgust, especially in relation to family and colleagues, indicating that allocentric tendencies were related to higher ratings of control over emotional displays in these social relationships. The correlations were negative, however, for happiness, fear, sadness, and surprise, indicating that allocentrism was related to less control of these emotions in these relationships. Again, this pattern of results is what one would expect based on IC differences in self-in-group and self-out-group relationships. In in-groups, there is a greater need to control disruptive emotions such as anger, contempt, and disgust. On the other hand, there is greater encouragement to display synthesizing emotions such as happiness. The similarity in correlations among fear, sadness, and surprise with happiness suggests that these emotions also play a similar synthesizing role in these social relationships, and future research on the social meanings of emotions will elucidate on the issue.

The relationship between IC and display rules was far from perfect, as was the overlap in the cross-national findings for IC and display rules. While in previous research these findings would have been used as a basis to interpret the "considerable" or even "sole" influence of IC on display rules and emotion, this study was unique in that the individual level assessment of IC allowed for a quantitative estimation of that contribution. This was, of course, assessed in Hypothesis 4. Comparison of country effect sizes with and without the IC scores as covariates indicated that the IC scores accounted for an average of 21.74% of the original effect size of country from Table 4. For the other simple effects analyses reported in the text, this percentage is larger, ranging from an average of 36.5% to 40.98%. Clearly, the contribution of IC to the cross-national differences in display rules is large. However, IC does not account for a majority of the variance between countries. This observation is also supported by the objective findings that almost all of the country effects computed in the ANACOVAs were still significant regardless of the fact that IC scores were controlled for. These suggest that something other than IC accounts for these remaining, and significant, cross-national differences in display rules. The influence of IC on display rules is even more tempered when the contribution of IC is compared to within-country, not between-country, differences on display rules. Given that the between-country differences on display rules generally accounts for less than 10% of the total variance in the data, the contribution of IC to this total variance is considerably smaller.

The gender differences reported in this study were also interesting and provocative. The ANACOVAs suggested that IC differences between males and females accounted for the significant differences between the genders on display rules regarding anger, contempt, and disgust, but not for the other emotions. These findings suggest that the influence of IC on gender differences in display rules is emotion-specific. We have no a posteriori interpretation of why IC accounts for gender differences on display rules for anger, contempt, and disgust, and not for the other emotions. Future research needs to examine what other dimensions, cultural and otherwise, may account for these differences. Recent research has shown that the dimensions which describe cultures are different from those which describe genders (Kashima *et al.*, 1995), which is not only consistent with our findings, but also highlights the possible dimensions that may account for the differences that IC does not (e.g., agency, relational focus, etc.).

The findings on gender also highlight the fact that the approach taken in this study need not be limited to cross-cultural comparisons. Indeed, many avenues of group difference research have merely classified individuals according to group membership and, upon finding significant differences between the groups, relate them to presumed psychological dimensions underlying the groups. The actual measurement of those dimensions, and the quantitative estimation of their actual contribution to the group differences, is an important approach that should be standard in scientific research, the goal of which should be to transform as many assumptions as possible into empirical issues.

One of the major limitations of this study concerns the measurement of IC. It could very well be that a different assessment technique of IC, such as Triandis' multimethod approach or Hui's context-specific approach, may give us different estimates of the contribution of IC to cross-national differences in display rules. While we acknowledge this possibility we believe it is unlikely, for several reasons. First, the ICIAI used in this study is correlated with both Triandis' and Hui's measures (Matsumoto *et al.*, 1997). Second, to the extent that there is an amorphous construct known as IC, it is likely that any psychometrically sound measurement of it will capture much of it because of direct and indirect relationships between the measure and all the possible theoretical extensions of IC. Thus, the IC score that is generated via the ICIAI represents not only the score on that specific construct of IC, but other aspects of IC as well. Consequently, correlations using this score will most likely represent to a large extent possible correlations with other possible scores of IC as well. In short, we believe that the correlations we obtained in this study between IC and display rules is representative of the general level of correlations one is likely to obtain between these two constructs.

Another limitation to this study concerns the display rule assessment. We opted for the measure used in this study, reasoning that display rules must exist as learned propositions about expression management based on social circumstance. As such, propositions are accessible through self-report measures similar to the one we used. This assessment has the advantages of accessing those propositions and beliefs directly, and in being relatively comprehensive across a wide range of emotions and social contexts. This measure, however, is considerably different from assessment of actual behavioral responses to emotion-eliciting situations. Clearly, future research needs to examine cultural differences in display rule-mediated behaviors, and the relationship between expressive behaviors and the propositions obtained in this study. In fact, the degree of conformity between rules as they exist as propositions and one's actual behaviors may be an important correlate of cultural constructs such as IC, with members of collectivistic cultures exhibiting greater degrees of conformity between rules and behavior, and members of individualistic cultures exhibiting less.

Where does this leave us? These findings confirm the importance of IC as an important construct that exists on the individual as well as macro-social levels, reflecting significant and reliable differences across individuals as well as larger cultural groups. These findings also suggest that IC is an important contributor to cross-national differences in variables such as emotion and display rules. Yet, these findings also highlight the limitations of these contributions, leaving much more room for other explanatory concepts, both on the group and especially on the individual level. Some of this room is likely to be taken up by other meaningful cultural constructs, such as power distance (Hofstede, 1980, 1983) or status differentiation (Matsumoto, 1991). With few promising exceptions, however, such as Kwan *et al.*'s (1997) use of the "big five" factors of personality or Sidanius' (Pratto *et al.*, 1994)

development of the Social Dominance Orientation, researchers have not yet developed instruments that can reliably assess constructs other than IC on the individual level. It is incumbent on the field to develop these measures and use them in studies directly comparing and assessing the cumulative influence of culture on emotion.

Even when we are able to assess culture more fully than from only one or two dimensions, we may find that culture, in its broadest sense, accounts for more, or less, of individual variation in human behavior than we think. Only then will our challenge be the greatest in accounting for all the rest of the variance.

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