ARE CULTURAL DIFFERENCES IN EMOTION REGULATION MEDIATED BY PERSONALITY TRAITS?

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This article reports a study that documents United States–Japan differences in emotion regulation and demonstrates that those differences are entirely accounted for by individual differences in personality. These findings raise questions about studies that merely document cross-national differences in a psychological variable yet attribute the source of the observed differences to cultural variables without empirical justification to do so. Such differences may be accounted for by aggregate differences in personality.

Keywords: culture; personality; emotion; emotion regulation; mediation; unpackaging

Emotion regulation is an important concept in personality and social psychology (Feldman Barrett, Gross, Christensen, & Benvenuto, 2001; Gross, 2002; Gross & John, 2003). Individual differences in it have been related to inauthenticity, interpersonal functioning, and well-being (Gross & John, 2003), intimacy in close relationships (Field, 1994; Gottman, 1994), and public behavior in contexts as wide ranging as athletics (Hanin, 2000) and the workplace (Fisher & Ashkanasy, 2000; Grandey, 2000). It contributes to positive intracultural and intercultural adjustment; immigrants and sojourners with better emotion regulation have less depression, anxiety, culture shock, and homesickness, and report higher levels of happiness, well-being, marital satisfaction, language proficiency, and income (Matsumoto, LeRoux, Bernhard, & Gray, 2004; Matsumoto et al., 2003; Matsumoto et al., 2001). And these outcomes can be predicted months after assessment (Matsumoto et al., 2003; Yoo, Matsumoto, & LeRoux, in press).

There are two ways of conceptualizing emotion regulation (Bridges, Denham, & Ganiban, 2004; Cole, Martin, & Dennis, 2004; Eisenberg & Spinrad, 2004). One way views emotions as regulators of intrapersonal and interpersonal processes, referring to the role that emotions play in everyday life and the changes that occur when an emotion is activated (i.e., emotion regulating something else). A second way views emotions as they themselves are regulated (i.e., changes in activated or aroused emotion or emotion as being regulated; Cole et al., 2004). The work reported here is based in the latter conceptualization. I define *emotion regulation* as the ability to manage and modify one's emotional reactions to achieve goal-directed outcomes.

The purpose of this article is to document the existence of country differences on emotion regulation and demonstrate that those differences are mediated by individual differences in personality traits. Below, I present a conceptualization of emotion regulation and

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how cultural differences should be manifested in it. I then discuss the need for unpackaging those cultural differences, which I do with personality.

A THEORETICAL BASIS FOR UNDERSTANDING EMOTION REGULATION AND CULTURAL DIFFERENCES IN IT

Understanding emotion regulation begins with a model of emotion arousal. Although many theories exist, by and large, they suggest that a stimulus is first appraised and that this appraisal then leads to an emotion (Ellsworth & Scherer, 2003). The aroused emotion then activates thinking, feeling states, expressive behaviors, and physiology.

Based on this general model, Gross (2001) identified five points in time in which emotions could be regulated: (1) situation selection, (2) situation modification, (3) attentional deployment, (4) cognitive change, and (5) modulation of experiential, behavioral, or physiological responses. He characterized the first four processes as antecedent focused, and the fifth process as response focused. Gross (2001) and Gross and John (2003) focused on two of these: cognitive change and modulation of response. He called the former "cognitive reappraisal," defining it as the way in which individuals reconstrue an emotion-eliciting situation to change its emotional impact. He also focused on expressive suppression, which referred to the inhibition of ongoing emotional expressive behavior.

Cultural differences may exist in these emotion regulation processes. For instance, culture should affect antecedent-focused strategies (such as reappraisal), because cultures differ in their worldviews, ideologies, values, and concepts of the self (Markus & Kitayama, 1991, 1998; Matsumoto, 2005; Schwartz, in press; Schwartz & Bardi, 2001). Cultural worldviews are social constructions of reality that presumably characterize important aspects of one's culture (e.g., American culture is individualistic; East Asian cultures are collectivistic and group oriented; Mexican culture is family oriented, etc.). Because cultural worldviews can differ across cultures, they can help to construct different self-concepts in people of different cultures. Like the concept of the self (Markus, 1977), which is also a social construction, cultural worldviews are ideological belief systems that individuals use as guidelines to explain their and others' behaviors. When reappraising events, therefore, it is likely that individuals will tap into these cultural and personal ideologies to retrieve guidelines for ways in which they should evaluate or appraise emotion-eliciting situations.

Cultures should also affect the modulation of emotional responses (such as suppression) because of the role that emotion and its communication plays in social life. The expression of anger, for example, may be threatening to interpersonal relationships, whereas expressions of joy may bring people together. Expressions of disgust may be appropriate among one's work colleagues in one culture but not in another. These differences exist because the meanings of social relationships differ from one culture to the next, and these differences produce different guidelines for the regulation of expressive behavior. Collectivistic cultures (Hofstede, 2001), for instance, focus on the primacy of one's in-group goals over individual wishes and desires, requiring individuals to adjust their behavior to the group more than individualistic cultures. Collectivistic cultures, therefore, emphasize values such as conformity, obedience, and in-group harmony, at least as ideologies. These, in turn, produce guidelines for individuals in more collectivistic cultures to downplay emotional expressions that threaten in-group harmony and to encourage the expression of emotions that maintain or create harmony.

Cultures also differ in how they deal with status relationships. All societies must create hierarchies, which are necessary for organized group functioning, and ultimately, survival.

Some cultures emphasize the status and power differentials that exist within hierarchies, whereas other cultures minimize them (Hofstede, 2001). On one hand, one would expect that cultures that emphasize status and power differences will encourage the expression of emotions that maintain status and power differences and downplay emotional expressions that threaten this differential. On the other hand, cultures that minimize status and power differences within hierarchies should be more willing to allow for the expression of emotions that threaten the hierarchy.[1]

PREVIOUS RESEARCH DOCUMENTING CULTURAL DIFFERENCES IN EMOTION REGULATION

There are several bodies of evidence that indirectly point to the existence of cultural differences in emotion regulation. For example, cultures differ in appraisals that lead to emotion (Matsumoto, Kudoh, Scherer, & Wallbott, 1988; Mauro, Sato, & Tucker, 1992; Roseman, Dhawan, Rettek, & Naidu, 1995; Scherer, 1997a, 1997b), and these might correspond with situation selection. Cultures differ in emotional expression (Ekman, 1972; Friesen, 1972; Matsumoto & Kupperbusch, 2001) and in the rules governing their modification called display rules (Biehl, Matsumoto, & Kasri, in press; Matsumoto, 1990, 1993; Matsumoto, Takeuchi, Andayani, Kouznetsova, & Krupp, 1998; Matsumoto et al., 2005b; Matsumoto, Yoo, Hirayama, & Petrova, 2005c). And cultures differ in coping, a process related to cognitive reappraisal (Bjorck, Cuthbertson, Thurman, & Lee, 2001; Cole, Bruschi, & Tamang, 2002; Hwang, Scherer, Wu, Hwang, & Li, 2002; Morling, Kitayama, & Miyamoto, 2003; Taylor, Sherman, Kim, Jarcho, & Takagi, 2004; Tweed, White, & Lehman, 2004; VanderVoort, 2001; Yeh & Inose, 2002).

Country differences on the cultural dimension Hofstede (1980, 2001) calls "uncertainty avoidance" also provide indirect support for cultural differences on emotion regulation. Hofstede defines uncertainty avoidance as the degree to which people feel threatened by the unknown or ambiguous situations and have developed beliefs, institutions, or rituals to avoid them. Cultures high on uncertainty avoidance may be associated with low mean levels of emotion regulation, whereas cultures low on uncertainty avoidance may have high levels of emotion regulation. Individuals high on emotion regulation would tend to feel less threatened by unknown or ambiguous situations and would be able to deal with such situations more constructively than those with low emotion regulation.

Country differences on the personality dimension of neuroticism also provide indirect support for cultural differences on emotion regulation (Allik & McCrae, 2004; McCrae, 2002; McCrae, Costa, del Pilar, Rolland, & Parker, 1998; McCrae et al., 2005). Neuroticism is typically defined as "emotional lability," and high scores on it probably reflect low scores on emotion regulation and vice versa. Moreover, Hofstede's uncertainty avoidance and McCrae's neuroticism are related to each other on the country level, suggesting that these dimensions share a common denominator. One may be emotion regulation.

Country differences on extraversion also provide indirect support for cultural differences on emotion regulation. It has been correlated with both the experience and expression of positive emotions (reviewed below) and thus should be negatively correlated with suppression.

Direct evidence for the existence of cultural differences in emotion regulation comes from a recent study by Matsumoto and colleagues (2005a), who asked 3,258 respondents in 22 countries to complete Gross's (Gross & John, 2003) Emotion Regulation Questionnaire (ERQ). The ERQ is a 10-item instrument that assesses individual differences on reappraisal and suppression. Matsumoto and colleagues (2005a) reported moderate cross-country

differences on both scales (partial η^2s = .11 and .12, respectively). Moreover, country differences on emotion regulation were reliably correlated with country-level differences on uncertainty avoidance, neuroticism, and extraversion, as suggested above (as well as individualism and power distance).

OVERVIEW OF THE CURRENT STUDY

Two limitations of the existing literature. There are two ways in which the above literature is limited. First, the only study to directly document cultural differences in emotion regulation (Matsumoto et al., 2005a) used only a single measure of it—the ERQ. Thus, there is a need to replicate the country differences using a different measure to ensure that the differences did not occur solely as a function of the measurement technique used to generate them. This article does so by using the Emotion Regulation Scale of the Intercultural Adjustment Potential Scale (ICAPS; Matsumoto et al., 2004; Matsumoto et al., 2003; Matsumoto et al., 2001).

The second limitation is that it falls short in informing us about the source of those differences. Although country-level correlations between emotion regulation and other cultural, personality, and psychological processes have been reported (Matsumoto et al., 2005a), they cannot tell us about what variables are operating on the individual level to produce the observed cultural differences in the first place. The existence of country and cultural differences cannot be used as a basis to interpret the source of those differences; instead, they need to be explicated by unpackaging the contents of culture—the specific psychological processes that are different in different cultures that are theoretically related to the target dependent variables and that are conceptually considered to produce the hypothesized cultural differences (Bond & Tedeschi, 2001; Matsumoto, 2003; Matsumoto & Yoo, in press; van de Vijver, 2001). What is required empirically is the inclusion of such unpackaging variables measured on the individual level along with emotion regulation, the demonstration that the unpackaging variables are themselves different between cultures, and the mediation of the country differences in emotion regulation using the unpackaging variables. The current study does exactly that by unpackaging cultural differences in emotion regulation with individual differences in personality traits.

Why should personality unpackage cultural differences in emotion regulation?

Emotion regulation refers to a specific psychological process that is embedded within a larger constellation of personality traits. Emotions are central to the structure of personality (Keltner, 1996; Malatesta-Magai, 1990); a large portion of this line of study has focused on the organization of emotion words as reflective of personality (Shaver, Murdaya, & Fraley, 2001; Shaver, Schwartz, Kirson, & O'Connor, 1987; Shaver, Wu, & Schwartz, 1992) and on the structure of affect (Feldman Barrett & Russell, 1999; Watson & Tellegen, 1985). Individual differences in attentional and perceptual processes in the brain linked to the regulation of behavior have been associated with a number of emotion processes (Derryberry & Reed, 2003), as have individual differences in reactivity and coping (Krohne, 2003).

More germane to this article is previous work linking specific personality traits to emotional experience and expression. For instance, neuroticism has been correlated with the experience of negative emotions (Schimmack, Radhakrishnan, Oishi, & Dzokoto, 2002). McCrae and colleagues (McCrae & Costa, 1999; McCrae et al., 2005) have identified six facets of neuroticism: anxiety, anger-hostility, depression, self-consciousness, impulsivity,

and vulnerability. Some refer directly to emotion regulation (e.g., impulsivity), and others refer to the possible affective consequences of emotion regulation (anxiety, depression) to affective-behavioral consequences of it (anger-hostility) and to self-related cognitive consequences of it (self-consciousness, vulnerability). Therefore, I view some emotion regulation processes, especially those related to reappraisal, to be part of neuroticism.

Extraversion is also correlated with both the experience (Schimmack et al., 2002) and expression of positive emotions (Costa & McCrae, 1980; Emmons & Diener, 1985, 1986; Pavot, Diener, & Fujita, 1990; Ruch, 1993). The facets of extraversion include warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions (McCrae & Costa, 1999; McCrae et al., 2005). Some of these facets are related to emotion regulation, especially concerning the expressive aspects of it. Therefore, extraversion should be negatively related to suppression.

There may be a relationship between other traits and emotion regulation. For example, agreeableness may be related to how individuals express negative emotions (McCrae & Costa, 1997); agreeableness and conscientiousness has been correlated with positive emotions (Costa & McCrae, 1980; McCrae & Costa, 1991); and openness has been correlated with the ability to recognize emotions (Matsumoto et al., 2000; Terracciano, Merritt, Zonderman, & Evans, 2003), which should be related to emotion regulation. The evidence for these relationships, however, is much weaker than that for neuroticism and extraversion. Moreover, reliable country differences on both extraversion and neuroticism exist (McCrae, 2002; McCrae et al., 2005), and these differences have been linked to country-level differences in emotion regulation (Matsumoto et al., 2005a) and uncertainty avoidance (Hofstede & McCrae, 2004). I hypothesize, therefore, that neuroticism and extraversion are the personality traits that are most relevant to emotion regulation.

These ideas were tested using a United States–Japan comparison. This comparison is compelling for several reasons. First, many cross-cultural comparisons involve these two countries, and there is a rich literature on cultural similarities and differences across a wide range of psychological processes, including those related to emotional experience, expression, and judgment (Kitayama, Markus, & Matsumoto, 1995b; Matsumoto, 1992; Matsumoto et al., 2005c; Mesquita, 2001; Mesquita & Karasawa, 2002; Scherer, Matsumoto, Wallbott, & Kudoh, 1988). A comparison of emotion regulation, therefore, fits neatly within this literature. Second, these two countries were considerably different on emotion regulation in Matsumoto and colleagues' (2005a) recent 22 country study, with Americans having higher reappraisal than the Japanese and the Japanese having higher suppression than Americans. Third, these two countries differ on extraversion, neuroticism, and other personality traits in McCrae's previous studies (Allik & McCrae, 2004; McCrae, 2002; McCrae et al., 2005), and this is a necessary condition for testing unpackaging via mediation. Fourth, valid and reliable tests of emotion regulation and personality exist for use in both countries, which allays concerns over measurement equivalence.

METHOD

PARTICIPANTS

Sample 1. The participants in Sample 1 were 1,013 Americans (347 males, 666 females; mean age = 28.31 years) and 6,409 Japanese (1,933 males, 4,342 females, remainder unknown; mean age = 26.84 years). All were born and raised in their respective country.

In the United States, 44.9% of the sample were students; in Japan, 72.5%. The American sample was ethnically diverse, with 48.4% European Americans, 5.9% African Americans, 17.2% Asian Americans, 10.2% Hispanic or Latino Americans, and 18.3% other ethnicities. Sample 1 completed only one of the emotion regulation measures below (ICAPS); thus, their data can only be used to test for country differences in emotion regulation.

Sample 2. The participants in Sample 2 were 217 Americans (169 females, 48 males; mean age = 24.00 years) and 151 Japanese (78 males, 73 females; mean age = 21.01 years). All were born and raised in their respective country and were students at universities in the San Francisco bay area and Kobe and Tokyo, Japan. The American sample was ethnically diverse, with 40.1% European Americans, 8.3% African Americans, 15.8% Asian Americans, 11.1% Hispanic or Latino Americans, 24.7% other ethnicities. Sample 2 completed all measures described below: Their data, therefore, can be used to test the notion that personality mediates country differences on emotion regulation.

INSTRUMENTS

Emotion regulation. Two instruments were used to assess emotion regulation. One was the ERQ (Sample 2 only), a 10-item scale (see appendix) that asks participants to rate the extent to which they typically try to control their emotional expression and experience (Gross & John, 2003). The ERQ has high temporal and internal reliability and convergent and discriminant validity. Participants rated each item using a 7-point scale anchored from 1 = *strongly disagree* to 7 = *strongly agree*. It is composed of two subscales: Reappraisal (6 items) and Suppression (4 items). Acceptable alphas were obtained for both countries for suppression ($\alpha = 0.79$ and 0.79) and reappraisal ($\alpha = 0.76$) for the United States. The alpha for reappraisal for the Japanese was low (0.56), and this should be taken into account in interpreting the findings.

The other scale was the ICAPS (both samples). The ICAPS has been used successfully to predict intercultural and intracultural adjustment (Matsumoto et al., 2004; Matsumoto et al., 2003; Matsumoto et al., 2001). It was originally validated on Japanese samples, but studies have demonstrated its internal, temporal, and parallel forms reliability, and convergent, discriminant, incremental, concurrent, and future predictive validities on multiple cultural groups, including Americans. It includes 55 items that were selected according to their empirical ability to predict intercultural adjustment. Respondents rated each on a 7-point scale anchored from 1 = *strongly disagree*, 4 = *neutral*, and 7 = *strongly agree*.

Factor analyses were computed on the ICAPS data from 10,989 respondents, including the American and Japanese respondents in this study and individuals from many other countries around the world. The analyses were conducted twice, once involving raw data and the other involving data that were first standardized within individuals across items and then within country across individuals (Leung, 1989). (The use of such doubly standardized data produces pancultural factor solutions that eliminate positioning effects of individuals or countries.) Both analyses produced the same results. The first factor accounted for 10.76% of the total variance in the data, and 11 items with factor loadings of .30 or higher were identified as assessing emotion regulation (appendix). Scale scores were computed by averaging the items after reverse coding negatively loading ones (italicized). Acceptable alphas were obtained for both the United States and Japanese samples ($\alpha = .74$ and .74 for Sample 1, and .70 and .62 for Sample 2, respectively).

Personality. Sample 2 participants completed the NeoFive Factor Inventory (Costa & McCrae, 1989, 1992), a 60-item version of form S of the NEO-PI-R that provides a measure of the five factor model: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Costa & McCrae, 1992). Convergent and discriminant validity is excellent. All alphas were within the acceptable ranges for both cultures (United States alphas = 0.85, 0.68, 0.68, 0.65, and 0.77; Japan alphas = 0.75, 0.76, 0.66, 0.57, and 0.73, respectively).

PROCEDURES

The measures were translated into Japanese, and the accuracy of the translation was verified using back translation procedures. For Sample 1, data were aggregated from a number of published (Matsumoto et al., 2004; Matsumoto et al., 2003; Matsumoto et al., 2001) and unpublished studies. In some, the ICAPS was the only measure used; in others, it was part of a battery of instruments. Some involved only questionnaires; others involved behavioral tasks as well. In some studies, the ICAPS was completed in groups; in others, individuals were allowed to complete the ICAPS individually at their leisure. No previous study has reported cultural difference tests on the emotion regulation scale of the ICAPS.

For Sample 2, all measures were assembled in packets and counterbalanced. In the United States, the participants took the packets home, completed them at their leisure, and returned them 1 week later. In Japan, the participants completed the packets in class and returned them to the experimenter immediately after completion.

RESULTS

COUNTRY DIFFERENCES ON EMOTION REGULATION

ICAPS ER. I computed a two-way Analysis of Variance (ANOVA) on the ICAPS Emotion Regulation (ER) data from Sample 1 using country and gender as factors. The country main effect was significant, $F(1, 7183) = 472.30$, $p < .001$, $\eta^2 = 0.06$, indicating that Americans ($M = 4.51$, $SD = 0.86$) had higher emotion regulation scores than the Japanese did ($M = 3.91$, $SD = 0.89$). This corresponded with a moderately large effect size, $d = .68$.[2]

A two-way ANOVA on the ICAPS ER data from Sample 2, using country and gender as factors, also produced a significant country main effect, $F(1, 210) = 19.33$, $p < .001$, $\eta^2 = 0.08$, indicating that Americans ($M = 4.19$, $SD = 0.84$) had higher emotion regulation scores than did the Japanese ($M = 3.61$, $SD = 0.78$). This difference corresponded to a moderately large size effect, $d = .71$, and replicated the same finding from Sample 1.[3]

ERQ. I computed two-way ANOVAs on the ERQ reappraisal and suppression scores. On the former, the country main effect was significant, $F(1, 362) = 84.04$, $p < .001$, $\eta^2 = 0.19$, indicating that the Americans ($M = 5.02$, $SD = 0.97$) had higher reappraisal scores than the Japanese did ($M = 3.84$, $SD = 1.25$). This difference corresponded to a large effect, $d = 1.09$.[4] On suppression, the country main effect was again significant, $F(1, 362) = 27.61$, $p < .001$, $\eta^2 = 0.07$, indicating that the Japanese ($M = 3.99$, $SD = 1.20$) had higher suppression scores than did the Americans ($M = 2.99$, $SD = 1.20$). This also corresponded to a large effect, $d = .83$.[5]

THE RELATIONSHIP BETWEEN ICAPS ER AND ERQ

The item content of the ICAPS ER scale (appendix) suggested that it might tap into neuroticism more strongly than it did emotion regulation. Indeed, ICAPS ER was highly correlated with neuroticism in the United States, $r(215) = -.74$, $p < .01$, and Japan, $r(149) = -.60$, $p < .01$ (Sample 2 data). We thus tested the incremental validity of the ICAPS ER in assessing emotion regulation by computing two sets of hierarchical regressions—one using ERQ Reappraisal as the dependent variable; the other using ERQ Suppression. In both, country was entered on the first step; the five personality variables were entered on the second using stepwise criteria; ICAPS ER was entered on the third. For ERQ reappraisal, ICAPS ER predicted additional variance above and beyond that already accounted for by country and personality, $\beta = .13$, $p < .05$. For ERQ suppression, ICAPS ER did not account for additional variance. Thus, ICAPS ER appeared to assess some degree of emotion regulation related to reappraisal, above and beyond that associated with general neuroticism. These findings are also supported by a previous study (Matsumoto et al., 2003) demonstrating that ICAPS ER predicted adjustment above and beyond the personality traits measured by the Big Five Inventory (John, 1989, 1990), which includes neuroticism and the California Psychological Inventory (Gough, 1986).

COUNTRY DIFFERENCES ON PERSONALITY

Two-way ANOVAs on the five personality traits produced significant country main effects for neuroticism, $F(1, 210) = 24.05$, $p < .001$, $\eta^2 = 0.10$; extraversion, $F(1, 213) = 8.11$, $p < .01$, $\eta^2 = 0.04$; and conscientiousness, $F(1, 213) = 22.56$, $p < .001$, $\eta^2 = 0.10$. The Japanese had significantly higher scores than the Americans on neuroticism, whereas the Americans had higher scores on extraversion and conscientiousness.[6] These findings replicated those reported previously by McCrae (2002) and McCrae et al. (2005), who reported that the Japanese scored higher than Americans on neuroticism and lower on extraversion. Additionally, Japanese scores were lower than the American scores on conscientiousness in McCrae's (2002) study.

DOES PERSONALITY ACCOUNT FOR THE COUNTRY DIFFERENCES, AND VICE VERSA?

To examine whether the country differences in emotion regulation were accounted for by personality, I computed separate hierarchical multiple regressions on each of the three emotion regulation scores (ICAPS ER, ERQ reappraisal, and ERQ suppression), entering country on the first step and extraversion, neuroticism, and conscientiousness on the second. (I used only the three personality traits on which there were cultural differences.) The addition of the personality variables accounted for a significant amount of additional variance for all three emotion regulation variables. The regression coefficients for country, which were statistically significant in the first step of all analyses, were not significant on the second when the personality variables were entered. I tested the differences in the coefficients for country using the difference in coefficients test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).[7] All three tests were statistically significant, indicating complete mediation of the country differences in emotion regulation by the three personality variables (Table 1).

I then reversed the dependent variables and mediators to examine whether the three emotion regulation variables mediated country differences in personality. The regression coefficients for country did decrease in all three analyses, and the differences were all statistically significant (Table 1). For extraversion, the country regression coefficient was

TABLE 1
Results of Hierarchical Regressions and Mediation Tests

		R^2			$B_{country}$		
Dependent Variable	*Mediator*	*First Step*	*Second Step*	ΔR^2	*First Step*	*Second Step*	t_{B1-B2}
ICAPS ER	Extraversion, neuroticism, conscientiousness	.115**	.596**	.478**	–.041**	–.004	18.50**
Reappraisal		.028*	.096*	.068**	–.023*	–.008	15.00**
Suppression		.061**	.147**	.086**	.039**	.019	24.02**
Neuroticism	ICAPS ER, reappraisal, suppression	.105**	.560**	.455**	.345**	.114*	13.59**
Extraversion		.071**	.255**	.184**	–.227**	–.072	155.00**
Conscientiousness		.152**	.274**	.122**	–.354**	–.216**	138.00**

NOTE: ICAPS ER = Intercultural Adjustment Potential–Emotion Regulation Scale.
*$p < .05$. **$p < .001$.

not significant on the second step, indicating complete mediation. But the regression coefficients for country on neuroticism and conscientiousness were still significant on the second step, indicating only partial mediation.

GENERAL DISCUSSION

The findings replicated Matsumoto and colleagues' (2005a) report of cultural differences in emotion regulation and extended the previous findings by using an additional measure of emotion regulation. They suggested rather robust differences between the United States and Japan on several different processes of emotion regulation. Furthermore, individual differences in extraversion, neuroticism, and conscientiousness completely mediated the country differences on all three emotion regulation variables. Reversing the mediational analyses indicated that emotion regulation accounted for some but not all of the country differences in neuroticism and conscientiousness. These findings are consistent with the notion that emotion regulation is part, but not the whole, of some personality traits and that country differences on emotion regulation are basically accounted for by individual differences in these traits.

Examination of the regression coefficients at the second step of the mediational analyses provides some insights into which personality traits accounted for which emotion regulation variables. For reappraisal, extraversion was the only personality trait that had a statistically significant regression coefficient, $t(211) = 2.99$, $p < .001$, semipartial $r = .20$, suggesting that individuals high on extraversion use reappraisal more as an emotion regulation technique. For suppression, extraversion had a statistically significant regression coefficient on the second step of the analyses, $t(211) = 2.859$, $p < .01$, semipartial $r = –.18$, indicating that individuals high on extraversion had lower suppression scores. Conscientiousness also had a statistically significant coefficient, $t(211) = 2.004$, $p < .05$, semipartial $r = –.13$, indicating that those high in conscientiousness also had lower suppression.[8]

For ICAPS ER, both neuroticism and extraversion were associated with statistically significant regression coefficients on the second step of the mediational analyses,

$t(213) = 13.426$, $p < .001$, semipartial $r = –0.593$; and $t(213) = 3.182$, $p < .01$, semipartial $r = 0.141$, respectively. Individuals with higher scores on neuroticism had significantly lower scores on ICAPS ER, whereas individuals with higher scores on extraversion had higher scores on ICAPS ER. Items on the ICAPS ER Scale may reflect the feeling modulation aspect of emotion regulation, and if so, individuals with low neuroticism and high extraversion use this technique to regulate their emotions.

The unpackaging of the cultural differences on emotion regulation by personality strongly suggests that what appeared to be cultural differences may in fact have been group differences on personality traits that produced the apparent cultural differences. That is, the observed cross-national United States–Japan differences may have occurred not because of anything cultural per se but because Americans are more likely to have personalities that are associated with more reappraisal, whereas the Japanese are more likely to have personalities associated with more suppression. This possibility raises interesting questions concerning any cross-cultural study that documents differences without having controlled for the effects of personality. Indeed, there are many studies that have documented cross-national differences on many variables conceptually related to personality, such as self-enhancement or optimism-pessimism (Heine et al., 2001; Heine & Lehman, 1995), self-esteem (Kitayama, Markus, & Lieberman, 1995a), emotion and affect (Iwata & Higuchi, 2000; Kitayama et al., 1995b; Mesquita, 2001; Mesquita & Karasawa, 2002), or attributions (Miller, 1984). These previous findings have been invariably interpreted to have occurred because of cultural variables, especially cultural differences in worldviews or self-construals. The current findings, however, raise the possibility that those previous differences may have occurred because of differences in aggregate levels of personality between the compared country-level samples. That previous research documenting cross-national differences often do not incorporate variables that mediate them lends further support to this notion, because the attribution of the source of country differences to cultural variables is one that is not justified empirically. Without such mediation, any difference between the countries may have produced the observed effect. This study suggests that personality may be one such contributor.

How might culture and personality be causally linked so that apparent cultural differences may be understood as personality differences? There are different ways of interpreting the causal mechanisms between culture and personality that affect psychological processes such as emotion regulation. One views personality as the product of culture. This "environmental causation" perspective has been long presumed in the study of culture and personality, especially in the study of child-rearing practices (Whiting & Whiting, 1975). This notion is related to the concept of national character—modal personality types associated with cultural groups. Although the concept of national character generally lost favor in the 1960s (Hofstede & McCrae, 2004), there is still a dominant view that personality is created through the process of enculturation and that culture constitutes personality (Miller, 1999).

Another way of viewing the causal link between culture and personality is that genetically based personality traits are one of the factors that influence culture. This perspective is rooted in the Five Factor Theory of personality (McCrae & Costa, 1996, 1999) and is supported by several sources of data (Bouchard & Loehlin, 2001; Harker & Keltner, 2001; McCrae & Costa, 2003). McCrae suggests that regional and national differences in personality trait-related genes may give rise to some aspects of cultural differences. Differences in trait-related genes may occur because of accidents of ancestral migration, genetic drift, or even natural selection. If they exist, they may help to shape cultural values. For example, extroverts may be inherently inclined to express emotions more, and if

a cultural area contains many extroverts, expression may become the norm partly because of the existence of such trait-related genes in reverse causation (Allik & McCrae, 2002).

These two views lead to fundamentally different ways of viewing the relationship between culture, personality, and emotion regulation, based on the findings reported in this article. In one, cultures, which themselves are produced as people adapt to the contexts in which they live, influences personality, and personality in turn influences emotion regulation. In the other, biologically based personalities, which include individual differences in emotion regulation, interact with context to influence culture. Future studies will need to examine which of these or other theoretical models of the relationship between culture, context, personality, and emotion regulation are true.

This study was not conducted without limitations. One concerned the sole use of questionnaire data, which may have inflated the correlations between personality traits and emotion regulation because of common method variance. Future studies should use nonself-report measures, including observer or peer ratings and behavioral assessments. Also, this study was only conducted in two countries. Replications in a broader range of countries are clearly needed. The availability of cross-culturally equivalent tests of personality traits is a major plus and allows for such tests to occur.

Finally, there is the conceptual possibility that emotion regulation is personality. If this is true, then it would make perfect sense that cultural differences in emotion regulation were completely mediated by individual differences in personality. I argue, however, that emotion regulation refers to a specific psychological process related to emotional arousal, which is part but not the whole of personality. Personality should refer to individual differences in behavioral tendencies that include the regulation of emotion but also many other aspects of emotion (e.g., arousal, sensation seeking, etc.) and other psychological processes not directly related to emotion (cognitive styles, specific thought processes, sociability, etc.). Moreover, the same could be said about many other psychological processes studied across cultures (e.g., self-enhancement). Although I do believe that the organization of emotion in an individual plays a central role in the organization of that individual's personality, the whole of personality cannot be conceptually constituted solely by the regulation of emotion. As such, I would contend that emotion regulation is a part, but not the whole, of personality, and because of that, individual differences on personality account for cultural differences in emotion regulation. The fact that emotion regulation did not completely mediate the country differences in personality also supports this notion.

NOTES

1. This discussion has focused on reappraisal and suppression, because they are the only aspects of emotion regulation measured in this study. Cultural differences may exist, however, in other aspects of emotion regulation. For instance, cultures may differ in the situations selected in which one engages. Individualistic cultures, for instance, are correlated on the country level with extraversion and openness (Hofstede & McCrae, 2004), and as such, one would expect that members of individualistic cultures may seek out more emotion-eliciting situations that produce more varied emotions in the first place relative to members of collectivistic cultures. Cultural differences may exist in the degree to which individuals modify situations to regulate emotions as opposed to modifying their own emotional reactions. One characteristic of collectivistic cultures, for example, is the promulgation of an ideology that individuals should adjust their behaviors to the group or context. If so, one may expect that members of collectivistic cultures would modify situations less than members of individualistic cultures to regulate their emotions. And cultural differences may exist in the degree of vigilance for certain emotions

in certain contexts, precisely because of their ideological cultural worldviews. Members of collectivistic cultures may be more sensitive to displays of anger relative to members of individualistic cultures, because these may threaten in-group harmony. Members of high status-differentiating cultures may be more sensitive to displays of contempt relative to members of less status differentiating cultures, because these may be more threatening to status differentials. Such cultural differences should lead to cultural differences in attentional deployment, which is yet another antecedent-focused aspect of emotion regulation.

2. The country by gender interaction was also significant, $F(1, 7183) = 60.70$, $p < .001$, $\eta^2 = 0.01$. Tests of simple effects of country indicated that Americans had higher mean scores than the Japanese separately for both males and females but that the effect size was larger for males ($\eta^2 = 0.14$) than for females ($\eta^2 = 0.03$). The gender main effect was not significant.

Also, there were significant country differences on age, $F(1, 7399) = 9.85$, $p < .01$, $\eta^2 = 0.001$, and age correlated with emotion regulation for both Americans, $r(1001) = 0.19$, $p < .001$, and the Japanese, $r(6299) = 0.37$, $p < .001$. Thus, I recomputed the overall two-way ANOVA using age as a covariate. Exactly the same results as reported above were obtained. The same country differences were also obtained when only students were included in the analyses.

3. The country by gender interaction was marginally significant, $F(1, 210) = 3.57$, $p < .06$, $\eta^2 = 0.02$. Tests of simple effects of country indicated that American females had higher mean scores than Japanese females did, $F(1, 143) = 18.22$, $p < .001$, $\eta^2 = 0.11$, but there was no difference for males; the means, however, were in the same direction. The gender main effect was not significant.

4. Neither the gender main effect nor the interaction was significant.

5. The country by gender interaction was also significant: $F(1, 362) = 17.20$, $p < .001$, $\eta^2 = 0.05$. Simple effects indicated that Japanese females had much higher suppression scores than American females had, $F(1, 239) = 60.95$, $p < .001$, $\eta^2 = 0.20$, but there were no differences between American and Japanese males.

There were significant country differences on age, $F(1, 363) = 26.96$, $p < .001$, $\eta^2 = 0.07$. Thus, I recomputed all ANOVAs reported above using age as a covariate. Exactly the same results as reported above were obtained.

6. The country by gender interaction was significant for extraversion, $F(1, 213) = 8.28$, $p < .01$, $\eta^2 = 0.04$. Simple effects of country indicated that American females had significantly higher extraversion scores than did Japanese females, $F(1, 145) = 20.01$, $p < .001$, $\eta^2 = 0.12$, but that there were no country differences for males.

7. Another way to test the statistical significance of the mediation would be to use the Sobel test (Baron & Kenny, 1986). This test, however, tests the indirect effect of country on emotion regulation via personality. The statistical significance of this effect cannot, however, indicate whether the direct effect of country on emotion regulation is different when personality variables are accounted for, which is the aim of this article. The only tests that can do so are a series of tests that involve testing the difference between the regression coefficients with and without the mediator, as outlined more recently by MacKinnon et al. (2002). This is precisely what was done.

8. It is counterintuitive that the Americans scored higher than the Japanese on this trait, but this is a consistent finding using Self-Report Scales (Allik & McCrae, 2004; McCrae, 2002).

APPENDIX

ITEMS FROM THE EMOTION REGULATION QUESTIONNAIRE

1. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.
2. I keep my emotions to myself.
3. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.
4. When I am feeling positive emotions, I am careful not to express them.
5. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.
6. I control my emotions by not expressing them.
7. When I want to feel more positive emotion, I change the way I'm thinking about the situation.
8. I control my emotions by changing the way I think about the situation I'm in.
9. When I am feeling negative emotions, I make sure not to express them.
10. When I want to feel less negative emotion, I change the way I'm thinking about the situation.

ITEMS FROM THE INTERCULTURAL ADJUSTMENT POTENTIAL– EMOTION REGULATION SCALE

1. I rarely feel anxious or fearful.
2. *I usually feel lower than others.*
3. *Being in tense emotional situations scares me.*
4. I am usually good at dealing with emergencies.
5. I do not worry very much.
6. *I usually feel helpless and wish someone would make it better for me.*
7. *I often worry about things that might go wrong.*
8. *If I have done something wrong I want to hide from other people.*
9. I am happy with my body.
10. *I am uncomfortable when my boss is around.*
11. I feel happy most of the time.

SOURCE: Gross & John (2003) for Items from the Emotion Regulation Questionnaire; Matsumoto (2001) for Items from the ICAPS ER Scale.
NOTE: Italicized items are reverse coded.

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