

# Implications of Emotion Expressivity for Daily and Trait Interpersonal and Intrapersonal Functioning Across Ethnic Groups

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Previous research has suggested that ethnicity and self-construals may play a role in shaping the utility and function of emotion expression. In a 10-day daily diary study, we examined the effects of positive and negative emotion expressivity on daily and trait intrapersonal and interpersonal functioning across Asian and European American college students. One hundred fifty-five Asian Americans and 74 European Americans completed questionnaires assessing daily affect and daily interactions. Results revealed no significant ethnic group differences in the tendency to express positive or negative emotions, nor in the relationship between positive emotion expressivity and intrapersonal functioning. However, ethnic group differences were apparent in the relation between negative emotion expressivity and functioning. Asian Americans high in negative emotion expressivity were more likely to report poorer daily and trait intrapersonal functioning, whereas these relationships were unrelated for European Americans. Among highly interdependent individuals, positive emotion expressivity was associated with greater daily positive mood, lower trait interpersonal problems, and lower depressive symptoms; however, this was not shown for low interdependence individuals. Our findings suggest that the valence of emotional expressions and culture needs to be considered in studying the adaptive function of emotion expression.

*Keywords:* emotion expression, Asian American, culture, emotion valence

Emotion expression has important implications for intrapersonal and interpersonal functioning (Mesquita & Leu, 2007). Highly expressive individuals have been found to have greater psychological well-being than individuals who are less expressive (Kring, Smith, & Neale, 1994). However, this finding has emerged largely with European American samples and general emotion expressivity. Fewer studies have examined functional differences in the valence (i.e., positive vs. negative) of emotion expressivity and potential ethnic/racial and cultural differences. Cultural differences in independent and interdependent self-construals raise the question of whether the expression of positive and negative emotions has differing implications for functioning among Asian Americans and European Americans. In the present study, we examined ethnic/racial group and cultural differences in the associations between positive and negative emotion expressivity on intraper-

sonal (i.e., daily and trait affect) and interpersonal functioning (i.e., daily and trait social interactions) among Asian American and European American college students.

Emotion expressivity is defined as a trait for the extent to which a person outwardly displays emotions regardless of valence or context (Kring et al., 1994). Emotion expression allows individuals to express their inner feelings to assert their individuality (Kim & Sherman, 2007), potentially leading to more social support which may confer protection from psychological distress (Fleming, Baum, Gisriel, & Gatchel, 1982). Indeed, individuals high on emotion expressivity experience fewer depressive symptoms (Sloan, Strauss, & Wisner, 2001) and greater interpersonal functioning (Burgin et al., 2012). However, the functions of emotion expressivity can differ depending on emotional valence. For instance, negative emotion expressivity predicted increased grief, whereas positive emotion expressivity predicted decreased grief, following bereavement (Bonanno & Keltner, 1997). Moreover, negative, but not positive, emotion expressivity predicted marital conflicts among couples (Rauer & Volling, 2005). Thus, emotion valence may play an important role in the function of emotion expression.

Not only do the functions of emotion expressivity differ according to emotional valence, they can also vary across cultural groups. Researchers have examined interdependent versus independent self-construals to understand cultural differences between Asian Americans and European Americans (Markus & Kitayama, 1991, 2010). The independent view of the self prevalent in Western

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cultures is autonomous and contains a set of stable self-defining attributes that remain relatively fixed across contexts. In this cultural context, affirming personal beliefs and expressing the self is encouraged. In contrast, the interdependent view of the self prevalent in Asian cultures is relational, context-dependent, and defined through relationships and group memberships. In this cultural context, fitting in and maintaining social harmony is prioritized over individual needs and goals (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Together, independent and interdependent self-construals provide a *cultural framework* that can help explain ethnic/racial and cultural differences in the functions of emotion expression (Kitayama & Markus, 1994).

Cultural differences in display rules, valued emotional states, and emphasis on social harmony may be mechanisms that explain cultural differences in the functions of emotion expression. Display rules are culture-specific prescriptions about who can show what types of emotion when and to whom (Ekman, 1972). By a young age, children in Western contexts are encouraged to speak up and express themselves. High levels of expressiveness are praised as healthy assertions of independence (Matsumoto, 1990). In contrast, among East Asians, parents are more likely to discourage children's expression of intense affect (Louie, Oh, & Lau, 2013). In a study by Ekman (1972), European Americans and Japanese participants viewed stressful films first alone, and then a second time in the presence of an experimenter. When alone, both European Americans and Japanese individuals displayed similar levels of negative emotion (e.g., fear and disgust). However, in the presence of the experimenter, Japanese individuals suppressed emotion display while the European Americans did not, which is consistent with predictions about the interpersonal nature of expressive downregulation.

Thus, expressing emotion may be culturally discouraged in East Asian interdependent contexts, and there is also evidence that the expression versus suppression of affect display has different implications for well-being across cultural groups. For example, in a sample of adolescents, coping with stress by downregulating emotion display was prospectively associated with poorer peer relations and depressive symptoms among European American teens but these links were absent or attenuated among Vietnamese American teens (Tsai, Nguyen, Weiss, Ngo, & Lau, 2015). On the contrary, emotion expressivity has been shown to relate to better interpersonal relationships among European Americans, but not among Korean and Chinese nationals (Kang, Shaver, Sue, Min, & Jing, 2003). Thus, emotion expressivity may be associated with positive adjustment for European Americans, but perhaps not among Asian or Asian American cultural groups.

Different cultures may also prioritize certain kinds of affective states. For example, affect valuation theory suggests that European Americans value high-arousal positive affective states, such as exuberance, whereas Asian Americans and Hong Kong Chinese individuals value low-arousal positive affective states such as tranquility (Tsai, Knutson, & Fung, 2006). Tsai and her colleagues posit that high arousal affect states serve to influence others, whereas low arousal states facilitate goals of interpersonal accommodation. Indeed, group concerns are weighed more strongly than individual concerns in interdependent societies. In particular, the interdependence value of social harmony guides emotion behavior and display to encourage smooth, conflict-free relationships (Chen & Chung, 1994). For example, revealing negative affect and per-

sonal distress may be seen as burdening others. Indeed, seeking support in the face of distress is discouraged and less common among Asian Americans compared to European American young adults owing to interdependence concerns (Kim, Sherman, Ko, & Taylor, 2006; Wang, Shih, Hu, Louie, & Lau, 2010).

So how might the function of positive and negative expressivity differ between Asian Americans and European Americans? The positive psychology literature asserts that expressions of positive emotions may be a universal sign of well-being, as the experience of positive emotion may facilitate approach behaviors that leads to positive inter- and intrapersonal outcomes (Fredrickson, 2001; Seligman & Csikszentmihalyi, 2000). Furthermore, positive emotion expressivity can build social bonds by signaling the desire to affiliate (Harker & Keltner, 2001). Indeed, Chinese American dating couples who displayed more positive emotions tended to report greater relationship satisfaction (Tsai, Levenson, & McCoy, 2006). With that stated, however, positive emotions may not be viewed and/or experienced as unequivocally "good" in Asian cultural contexts (Leu, Wang, & Koo, 2011). Among Asian Americans, one cultural goal encourages the balance of both positive and negative emotions, as opposed to the Western cultural goal of maximizing positive and minimizing negative emotions (Spencer-Rodgers, Williams, & Peng, 2010). Positive emotions may not have the same emotional meaning for Asian Americans as they do for European Americans (Leu et al., 2011). Despite differences in perception, however, the functions of positive emotion expression may still be associated with well-being and prosocial behaviors (e.g., smiling). As such, we posit that positive emotional expressivity will be associated with improved intrapersonal and interpersonal well-being across both cultural groups.

In contrast, the display of negative emotions may lead to poor intrapersonal and interpersonal functioning for Asian Americans, but not for European Americans. Given the societal norms against negative emotion expression in East Asian cultures, negative emotion expression may be associated with maladjustment. Alternatively, the display of negative emotions may also be indicative of preexisting maladjustment. The cultural norm hypothesis (Chentsova-Dutton & Tsai, 2007) suggests that depressed individuals tend to regulate their emotions in ways that are culturally incongruent. That is, distressed Asian Americans tend to express more negative emotions, and distressed European Americans tend to suppress more negative emotions. Because the open expression of one's emotions—whether positive or negative—is encouraged in the United States, we predict that negative expressivity will be associated with maladjustment for Asian Americans, but not for European Americans.

One novel contribution of the present study is its inclusion of daily level outcomes. Extant research has predominantly utilized cross-sectional or experimental designs (e.g., Kang et al., 2003; Tsai, Knutson, et al., 2006), with limited examination of outcomes as they happen on a daily level (see Burgin et al., 2012, for an exception). Daily level outcomes provide unique contributions, including the ability to examine within-person fluctuations on adjustment outcomes, increased ecological validity, and the avoidance of common methodological pitfalls present in other designs such as memory biases and the use of global heuristics (Scollon, Prieto, & Diener, 2009).

## Overview of the Current Research

To our knowledge, no study has examined ethnic/racial differences (i.e., differences stemming from ethnic/racial group membership) and cultural differences (i.e., differences stemming from self-construals) in the effects of emotion expressivity on daily and trait intrapersonal (viz., depressive symptoms, social anxiety symptoms, positive, and negative mood) and interpersonal functioning (viz., perception of interpersonal problems and arguments) across Asian Americans and European Americans. One main contribution of the present study is distinguishing between emotion valence (i.e., positive vs. negative emotions). We made the following hypotheses regarding ethnicity/race. First, Asian Americans would have lower levels of positive and negative emotion expressivity compared to European Americans due to cultural display rules and an emphasis on maintaining social harmony. Second, ethnicity/race would moderate the relationship between negative expressivity and interpersonal and intrapersonal functioning, but not the relationship between positive expressivity and functioning. Asian Americans would reap the same interpersonal and intrapersonal functioning benefits from positive expressivity as their European Americans peers; however, negative expressivity would be related to poorer interpersonal and intrapersonal functioning for Asian Americans, but not European Americans, because of its potential for disrupting social harmony.

With regard to cultural differences, our hypotheses rested on the notion that individuals with interdependent selves see themselves as part of a social group, and that their behaviors are greatly influenced by *others'* thoughts, feelings, and actions (Markus & Kitayama, 1991). Expressivity (either positive or negative) has strong social implications, and for that reason, we hypothesized that they would have different implications for functioning among individuals with an interdependent self. Thus, we hypothesized interdependent self-views would interact with positive expressivity, such that positive expressivity would be associated with increased interpersonal and intrapersonal well-being among individuals who are highly interdependent, but not for individuals who are less interdependent. By contrast, negative expressivity (e.g., anger) would be especially maladaptive among individuals who are highly interdependent as it can disrupt social harmony and the feeling of fitting in. Thus, negative emotion expressivity would be negatively associated with interpersonal and intrapersonal well-being among individuals who are highly interdependent, but not among individuals who are less interdependent.

## Method

### Participants

Participants were college students either enrolled in introductory psychology courses or recruited through fliers and e-mails, who received course credit or monetary compensation. Eligibility criteria included English proficiency and self-identification as European Americans or Asian/Asian Americans. Eighteen students were excluded because of missing data ( $n = 6$ ) or being demographically ineligible ( $n = 12$ ). Participants were 155 Asian Americans (52.26% female) and 74 European Americans (50% female). Asian Americans ( $M = 19.24$ ,  $SD = 1.27$ ) and European Americans ( $M = 19.12$ ,  $SD = 1.27$ ) did not differ in age,  $t(227) = 0.65$ ,

$p = .51$ . Of these participants, 82.6% were East Asian, 13.5% were Southeast Asian, and 3.9% were Filipino. Of the Asian Americans, 32.9% spoke a Chinese dialect (e.g., Mandarin, Cantonese), 20.0% spoke Korean, 8.4% spoke Vietnamese, 1.3% spoke Khmer, and .06% spoke Tagalog or Indonesian as their primary language in the home. We determined that 36.1% primarily spoke English at home. Among the 155 Asian Americans, 72 were first generation (i.e., foreign-born) and 83 were second generation (i.e., U.S.-born). First-generation Asian Americans ( $M = 19.65$ ,  $SD = 0.17$ ) were older than second-generation Asian Americans ( $M = 18.88$ ,  $SD = 0.11$ ),  $t(153) = 3.96$ ,  $p < .01$ , but the two Asian Americans groups did not differ in their gender distributions ( $\chi^2(1) = 0.01$ ,  $p = .90$ ). Among the 74 European Americans, seven were second generation (i.e., parents immigrated), and 67 were post-second-generation, and all of them primarily spoke English at home. First-generation Asian Americans had lived in the U.S. for 15.97 ( $SD = 4.98$ ) years on average. We refer to both first generation and second generation Asian Americans as Asian Americans in the present study because they all currently reside in America. We aggregated East and Southeast Asians (e.g., Vietnamese) into an Asian American ethnic/racial category due to their common endorsement of interdependence values (Slote & De Vos, 1998; Triandis, 1995).<sup>1</sup> In our sample, first-generation and second-generation Asian Americans did not differ in levels of independence and interdependence.

### Procedure

Participants were informed that they would be participating in a study on daily experiences of positive and negative events, social interactions, and mood. They completed a baseline survey on trait measures of emotion expressivity, and intrapersonal and interpersonal functioning. Following the baseline survey, participants were instructed to complete the daily diary survey at the end of each day for the next 10 days. Participants were e-mailed daily at 9 p.m. with the survey link, with a second reminder e-mail sent at 9 a.m. the next day if the participant had failed to complete the survey. The survey closed at noon the following day. These hours were chosen to maximize the report of daily events and social interactions since college students are often active during late hours (e.g., pulling "all-nighters" or socializing with friends). A 10-day span is typical for a daily diary design study that involves data collection once per day (e.g., 7 days in Silk, Steinberg, & Morris, 2003). Asian Americans ( $M = 9.12$ ,  $SD = 1.42$ ) completed significantly more daily diary surveys than European Americans ( $M = 8.63$ ,  $SD = 1.93$ ,  $t(221) = -2.15$ ,  $p < .05$ ). The proportion of completed diary reports was high, with complete data on 1,963 (87%) of the 2,260 potential days.

### Measures

#### Daily level variables.

**Intrapersonal functioning.** Daily intrapersonal functioning was assessed by the 36-item Profile of Mood States-Short Form (Curran, Andrykowski, & Studts, 1995). Participants were asked the degree to which they endorsed a list of emotion words (e.g.,

<sup>1</sup> Southeast Asians ( $M = 58.39$ ,  $SD = 8.40$ ) endorsed marginally more interdependent values than European Americans ( $M = 58.39$ ,  $SD = 8.70$ ),  $t(90) = 1.58$ ,  $p = .06$ .

happy, angry, sad) as true of themselves (0 = *Not at all*, 4 = *Extremely*) over the last 24 hr. Positive and negative mood subscales were scored by summing 10 positive affect items (e.g., “excited”) and 26 negative affect items (e.g., “angry”), with higher scores reflecting greater positive and negative mood. This measure has been previously used with Asian populations (Yoshihara, Hiramoto, Sudo, & Kubo, 2011).

**Interpersonal functioning.** Daily interpersonal functioning was assessed by the likelihood of having an argument. The likelihood that participants had an argument that day was assessed by a single yes or no item (i.e., “I argued with someone today.”). Previous research has also utilized single-item measures to assess interpersonal conflict (Almeida & Kessler, 1998; Chung, Flook, & Fuligni, 2009). Endorsement of this item was used as an indicator of poor interpersonal functioning. The total number of arguments over the 10 days was significantly correlated with the overall distress stemming from interpersonal conflict (measured with the Inventory of Interpersonal Problems—Short Circumplex Form [IIP-SC; Soldz, Budman, Demby, & Merry, 1995]),  $r = .16$ ,  $p = .01$ , and this association was not moderated by ethnicity.

#### Trait level variables.

**Emotion expressivity.** Emotion expressivity was measured with the 16-item Emotional Expressiveness Questionnaire (EEQ; King & Emmons, 1990) that assesses one’s tendency to express emotions both verbally and nonverbally. Participants rated their agreement with each item on a 7-point Likert scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*), comprising three subscales: (a) Positive Emotion Expressivity (e.g., “I laugh a lot”), (b) Negative Emotion Expressivity (e.g., “If someone makes me angry in a public place, I will cause a scene”), and (c) Intimate Emotion Expressivity (e.g., “When I really like someone they know it”). We excluded the Intimate Emotion Expressivity subscale because it was outside of the scope of the present study. King and Emmons (1990) reported good internal consistency and concurrent validity with other self-report measures of emotion expression. In the current sample, there was good internal consistency for the Positive Emotion Expressivity subscale (Cronbach’s alpha = .74 for Asian Americans and .79 for European Americans), and adequate internal consistency for the Negative Emotion Expressivity subscale (Cronbach’s alpha = .64 for Asian Americans and .70 for European Americans). A higher score on each subscale reflects a greater tendency to express positive or negative emotions. We conducted a multigroup confirmatory factor analysis to examine metric invariance following steps outlined in Brown (2006). In the first unconstrained model, the factor loadings and item intercepts were allowed to differ across groups. In the metric invariance model, factor loadings were constrained to be equal and compared to the unconstrained model. A chi-squared difference test comparing the two models revealed no evidence of measurement invariance across our ethnic/racial groups ( $\chi^2(8) = 12.31$ ,  $p = .14$ ).

**Self-construals.** Self-construal was measured by the 24-item Self-Construal Scale (Singelis, 1994). Participants rated the extent to which they agreed with statements reflecting an interdependent (e.g., “It is important for me to maintain harmony within my group”) or independent (e.g., “I am comfortable with being singled out for praise or rewards”) self-view on a 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) scale. Higher scores indicate stronger endorsement. Singelis (1994) reported adequate internal consistencies for both subscales. In the current sample, there was good internal

consistency for interdependent (Cronbach’s alpha = .80 for Asian Americans and .79 for European Americans) and independent self-construal (Cronbach’s alpha = .74 for Asian Americans and .79 for European Americans).

**Intrapersonal functioning.** Intrapersonal functioning was measured by the Social Anxiety Scale for Adolescents (SAS-A; La Greca & Lopez, 1998), and the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).

The SAS-A is an 18-item self-report measure of social anxiety across three subscales: Fear of Negative Evaluation, Distress in New Situations, and General Social Inhibition. Participants rated the extent to which each item (e.g., “I feel shy around people I don’t know”) describes them on a 1 (*not at all*) to 5 (*very well*) scale. Scores from the three subscales are summed to form a total score, where a higher score reflects greater symptoms. In line with previous studies, the total score was used (La Greca & Harrison, 2005). The SAS-A has been used and validated with young adults (Inderbitzen-Nolan & Walters, 2000) and Asian American college students (Lau, Wang, Fung, & Namikoshi, 2014). Past research has supported the construct validity of the SAS-A, including positive correlations with other measures of social anxiety (Inderbitzen-Nolan & Walters, 2000). In the current sample, internal consistency (Cronbach’s alpha) was .93 for both Asian Americans and European Americans.

The CES-D is a commonly used 20-item self-report measure of the severity of depressive symptoms. Participants rated the frequency of depressive symptoms (e.g., “I felt depressed”) in the past week from *rarely or none of the time (less than 1 day)* to *most or all of the time (5–7 days)*. A higher score reflects greater depressive symptoms. This measure has high internal consistency and adequate test-retest reliability (Radloff, 1977), and is reliable in young adult populations (Radloff, 1991). This measure has been previously used and validated with Asian Americans samples (Givens, Houston, Van Voorhees, Ford, & Cooper, 2007). The internal consistency for the current sample (Cronbach’s alpha) was .83 for both Asian Americans and European Americans.

**Interpersonal functioning.** Interpersonal functioning was measured with the 32-item IIP-SC (Soldz et al., 1995) designed to assess participants’ interpersonal distress. Using a 5-point Likert scale, participants were asked to rate the extent to which each item (e.g., “I try to please other people too much”) describes them from 0 = *not at all* to 4 = *extremely*. A higher score reflects poorer interpersonal functioning. Past research has shown evidence for excellent internal consistency, strong test-retest correlations, and construct validity (Soldz et al., 1995). This measure has been previously validated with Asian American samples (Ryder, Alden, Paulhus, & Dere, 2013). In the current sample, internal consistency (Cronbach’s alpha) was .90 for both Asian Americans and European Americans.

## Results

### Preliminary Analyses

To test our first hypothesis of whether there were significant ethnic/racial differences in emotion expressivity and other study variables, we conducted a series of independent *t* tests (Table 1). Contrary to our hypothesis, there were no ethnic/racial differences in positive or negative emotion expressivity, nor was there a

Table 1  
*Mean Difference of Variables for Asian Americans (n = 155) and European Americans (n = 74)*

	Asian Americans		European Americans		<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Self-construal					
Interdependent self-construal	61.26	8.87	58.39	8.40	.01
Independent self-construal	53.94	9.10	57.46	10.31	.02
Emotion expressivity variables					
Positive emotion expressivity	31.33	5.92	31.42	6.46	<i>ns</i>
Negative emotion expressivity	16.81	4.18	16.00	4.56	<i>ns</i>
Daily outcome variables					
Interpersonal Functioning					
Number of days of having an argument	1.65	1.83	2.18	2.25	.06
Intrapersonal Functioning					
Average positive mood across 10 days	25.12	7.18	27.76	7.53	.01
Average negative mood across 10 days	37.27	10.46	37.83	11.50	<i>ns</i>
Trait outcome variables					
Interpersonal functioning	1.95	.54	1.86	.52	<i>ns</i>
Intrapersonal Functioning					
Depressive symptoms	16.95	8.89	14.71	7.50	.07
Social anxiety symptoms	41.55	14.33	37.83	13.39	.07

Note. *ns* = not statistically significant.

difference in trait interpersonal functioning. Asian Americans reported marginally greater depressive ( $M_s = 16.95$  and  $14.71$ ,  $SD_s = 8.89$  and  $7.50$ ,  $p = .07$ , respectively) and social anxiety symptoms ( $M_s = 41.55$  and  $37.83$ ,  $SD_s = 14.33$  and  $13.39$ ,  $p = .07$ , respectively) compared with European Americans. With regard to daily level variables, Asian Americans reported fewer days in which they had an argument compared to European Americans ( $M_s = 1.65$  and  $2.18$ ,  $SD_s = 1.83$  and  $2.25$ ,  $p < .01$ , respectively). When daily mood was averaged across the 10 days, Asian Americans experienced lower positive mood compared with European Americans ( $M_s = 25.12$  and  $27.76$ ,  $SD_s = 7.18$  and  $7.53$ ,  $p = .05$ , respectively), but there were no ethnic/racial differences in average negative mood. With regards to self-construals, Asian Americans were more interdependent ( $M_s = 61.26$  and  $58.39$ ,  $SD_s = 8.87$  and  $8.40$ ,  $p = .01$ ) and less independent ( $M_s = 53.94$  and  $57.46$ ,  $SD_s = 9.10$  and  $10.31$ ,  $p = .02$ ) than European Americans.

Table 2 presents zero-order correlations of the study variables separately for Asian Americans and European Americans. We found a significant relationship between positive and negative

emotion expressivity for both Asian Americans and European Americans ( $r = .20$  and  $.53$ ,  $p < .05$  and  $.01$ , respectively). Using the Fisher  $r$ -to- $z$  transformation, it is worth noting that the magnitude of this relationship between positive and negative emotion expressivity is significantly weaker for Asian Americans than European Americans ( $z = -2.66$ ,  $p < .01$ ). Consistent with expectations for both groups, greater positive emotion expressivity was associated with better trait interpersonal functioning ( $r = -.35$  and  $-.21$ ,  $p < .01$ , respectively), depressive symptoms ( $r = -.48$  and  $-.25$ ,  $p < .01$ , respectively), and social anxiety symptoms ( $r = -.33$  and  $-.18$ ,  $p < .05$ , respectively). On the contrary, ethnic/racial differences emerged in the relationship between negative emotion expressivity and depressive symptoms. Specifically, negative emotion expressivity was associated with greater depressive symptoms for Asian Americans, but not for European Americans ( $r = .25$ ,  $p < .05$ , and  $r = -.09$ ,  $p > .05$ , respectively).

Then, we examined the association between self-construals and emotion expressivity. Controlling for age, gender, and

Table 2  
*Zero-Order Correlations Between Study Variables for Asian Americans (n = 155) and European Americans (n = 74)*

Variable	1	2	3	4	5	6	7	8	9	10
1. Independent self-construals		.14	.01	.27**	.06	.16*	.22**	-.23**	-.09	-.22**
2. Interdependent self-construals	-.06		.16*	.13	.10	.14	.10	.14	.13	.20*
3. Number of days having an argument	.26*	-.08		.09	.33**	-.20*	.17*	.24**	.26**	.28**
4. Average daily positive mood	.35**	.13	.03		-.08	.27**	.10	-.22**	-.34**	-.19*
5. Average daily negative mood	-.04	-.14	.23	-.18		-.16*	.34**	.53**	.63**	.49**
6. Positive emotion expressivity	.25*	.25*	.12	.33**	-.27*		.20*	-.21**	-.25**	-.18*
7. Negative emotion expressivity	.31**	.02	.13	.05	.00	.53**		.10	.25**	.15
8. Interpersonal functioning	-.25*	-.09	-.03	-.13	.51**	-.35**	-.21		.51**	.81**
9. Depressive symptoms	-.26*	-.10	-.02	-.42**	.68**	-.48**	-.09	.50**		.49**
10. Social anxiety symptoms	-.40**	-.01	-.11	-.26*	.49**	-.33**	-.14	.75**	.49**	

Note. Correlations above the diagonal are for Asian Americans, and below are for European Americans.

\*  $p < .05$ . \*\*  $p < .01$ .

ethnicity, we found that interdependent and independent self-construal predicted greater positive emotion expressivity ( $\beta = .19$  and  $.14$ ,  $ps < .05$ , respectively). In a separate analysis, controlling for age, gender, and ethnicity, independent self-construal predicted greater levels of negative emotional expressivity ( $\beta = .27$ ,  $p < .01$ ,  $\eta_p^2 = .07$ ), whereas interdependent self-construal did not.

## Analytic Approach

Data were analyzed using multilevel modeling (MLM) techniques found in Stata 12.0 (StataCorp, 2011). Multilevel regression analysis using Stata XT MIXED with maximum likelihood estimation was used to analyze continuous outcomes. Multilevel logistic regression analysis using Stata XT MELOGIT was used to analyze the binary outcome of having an argument. Daily within-subject variables were in the Level 1 model, and between-subjects variables such as emotion expressivity, sex, ethnicity group, and age were entered as predictors at Level 2. We included random effects of intercepts and slopes, and the covariance of intercepts and slopes. The reported  $B$ s are the fixed unstandardized regression coefficients of the predictors in the MLM.<sup>2</sup>

We first conducted MLM analyses with daily interpersonal and intrapersonal functioning as the outcome variables, and positive/negative emotion expressivity, ethnicity, and their interaction (i.e., Positive/Negative Emotion Expressivity  $\times$  Ethnicity interaction) as predictor variables, while controlling for age and gender as covariates. We controlled for age, given the potential for considerable differences in adjustment to college and establishment of social networks for younger versus older students. We controlled for gender because gender differences in emotion expressivity have been found in extant research (Hall, Carter, & Horgan, 2000).

To examine ethnic/racial differences in the association between positive or negative emotion expressivity and trait interpersonal and intrapersonal functioning, we then conducted two multivariate regression analyses. In the first multivariate regression model, we predicted each of our trait functioning variables (i.e., depressive symptoms, anxiety symptoms, and interpersonal problems) from ethnicity, positive emotion expressivity, and their interaction controlling for age and gender. In the second multivariate regression model, we predicted each of our trait functioning variables (i.e., depressive symptoms, anxiety symptoms, and interpersonal problems) from ethnicity, negative emotion expressivity, and their interaction controlling for age and gender. For each significant interaction we found, we then used the Potthoff variation of the Johnson-Neyman technique (Johnson & Fay, 1950; Potthoff, 1964) to identify the regions of significance. These shaded regions of significance represent the point to which the simple slopes of each group becomes significantly different from each other (Figures 1 and 2).

Lastly, we conducted several multiple regressions to examine the moderating effects of interdependent self-construal on the relations between emotion expressivity and well-being. In these analyses, we controlled for independent self-construal, ethnicity/race, age, and gender.

## Tests of Ethnic/Racial Group Differences on Daily Interpersonal and Intrapersonal Functioning

MLMs were used to investigate ethnic/racial differences in the effects of emotion expressivity on daily interpersonal and intrapersonal functioning.<sup>3</sup> Day was entered at Level 1 to control for any systematic changes in functioning over the 10 days. At Level 2, age, gender, ethnicity, positive and negative emotion expressivity, and the Ethnicity  $\times$  Emotion Expressivity interaction were entered simultaneously to examine their unique effects on daily levels of functioning. Positive and negative emotion expressivity interactions were tested in separate models (see Figure 1).

There were no significant Ethnicity  $\times$  Positive Emotion Expressivity interactions in predicting daily positive mood or negative mood. Collapsing across ethnic/racial groups, positive emotion expressivity predicted lower daily negative mood ( $B = -.49$ ,  $SE = .19$ ,  $p < .05$ ), and greater daily positive mood ( $B = .37$ ,  $SE = .13$ ,  $p < .01$ ). There was a marginally significant Ethnicity  $\times$  Positive Emotion Expressivity interaction ( $OR = 1.08$ ; 95% CI = [1.01, 1.17]) such that positive emotion expressivity predicted lower likelihood of having an argument for Asian Americans

<sup>2</sup> For reference, our multilevel models were specified with the following equations:

$$L1: \text{Mood}_{it} = b_{0i} + b_{1i}(\text{day}) + e_{it}.$$

$$L2: b_{0i} = g_{00} + u_{0i} + g_{01}(\text{gender}) + g_{02}(\text{age}) + g_{03}(\text{ethnicity}) + g_{04}(\text{negative emotional expressivity}) + g_{05}(\text{Ethnicity} \times \text{Negative Emotional Expressivity}) + u_{0i} \quad b_{1j} = g_{10} + u_{1i} + g_{11}(\text{gender}) + g_{12}(\text{age}) + g_{13}(\text{ethnicity}) + g_{14}(\text{positive emotional expressivity}) + g_{15}(\text{Ethnicity} \times \text{Positive Emotional Expressivity}) + u_{1i}.$$

$$L1: \text{Arguments}_{it} = b_{0i} + b_{1i}(\text{day}) + e_{it}.$$

$$L2: b_{0i} = g_{00} + u_{0i} + g_{01}(\text{gender}) + g_{02}(\text{age}) + g_{03}(\text{ethnicity}) + g_{04}(\text{negative emotional expressivity}) + g_{05}(\text{Ethnicity} \times \text{Negative Emotional Expressivity}) + u_{0i} \quad b_{1j} = g_{10} + u_{1i} + g_{11}(\text{gender}) + g_{12}(\text{age}) + g_{13}(\text{ethnicity}) + g_{14}(\text{positive emotional expressivity}) + g_{15}(\text{Ethnicity} \times \text{Positive Emotional Expressivity}) + u_{1i}.$$

<sup>3</sup> To examine whether differing acculturation levels in our Asian Americans sample influenced the links between emotion expressivity and functioning, we conducted a series of linear regressions with Asian Americans only testing generational status as a moderator variable. Specifically, we tested Generational Status (i.e., 1st vs. 2nd generation)  $\times$  Negative Emotion Expressivity and Generation Status  $\times$  Positive Emotion Expressivity interactions in predicting daily and trait interpersonal/intrapersonal functioning. Across all regression models, we did not find any significant interactions nor main effects, suggesting that there was not an effect of acculturation in our sample of first and second generation Asian Americans. We conducted a series of linear regressions with three groups (i.e., first generation Asian Americans, second generation Asian Americans, and European Americans). With European Americans as the referent group, two-way interaction terms were entered into the model (First Generation Asian Americans  $\times$  Emotion Expressivity and Second Generation Asian Americans  $\times$  Emotion Expressivity) to predict intrapersonal and interpersonal well-being. For positive emotion expressivity, we found a significant Second Generation Asian Americans  $\times$  Positive Emotion Expressivity interaction in predicting daily arguments. There were no other significant interactions or main effects. For negative emotion expressivity, we found significant First Generation Asian Americans  $\times$  Negative Emotion Expressivity and Second Generation Asian Americans  $\times$  Negative Emotion Expressivity interactions in predicting daily negative mood, and a significant Second Generation Asian Americans  $\times$  Negative Emotion Expressivity interaction in predicting depressive symptoms. The relations between positive and negative emotion expressivity differed the most between second generation Asian Americans and European Americans.

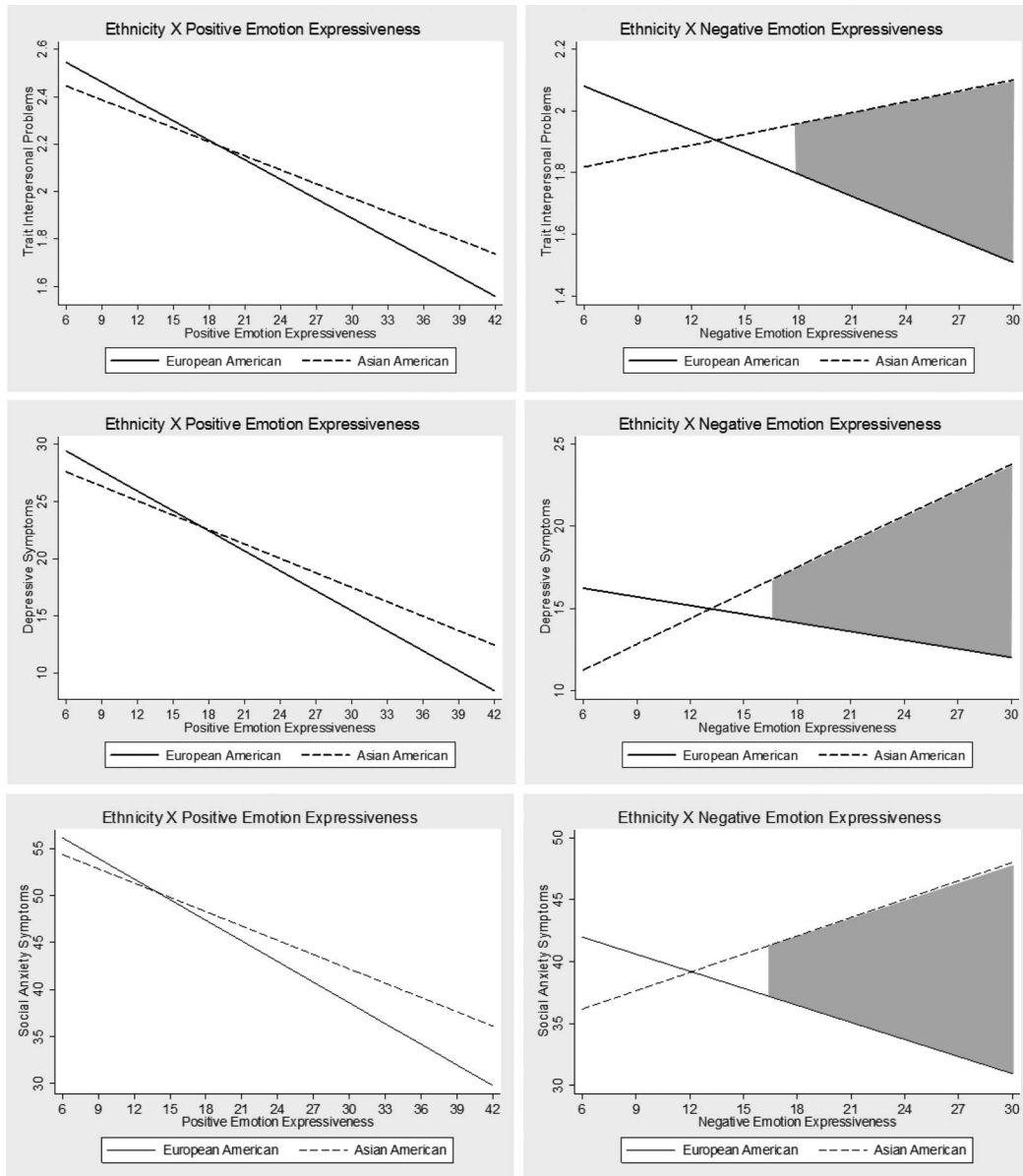


Figure 1. Interaction of Ethnicity  $\times$  Positive/Negative Emotion Expressivity on trait level variables controlling for age and gender. Shaded regions represent the area to which the simple slopes of each group become significantly different from each other.

( $B = -.01$ ,  $SE = .003$ ,  $p = .05$ ), but not for European Americans ( $B = .004$ ,  $SE = .005$ ,  $p > .05$ ).

With regard to negative emotion expressivity, we found significant ethnic/racial differences. There was a significant Ethnicity  $\times$  Negative Emotion Expressivity interaction ( $B = .87$ ,  $SE = .33$ ,  $p < .01$ ) on daily negative mood, such that negative emotion expressivity predicted greater daily negative mood for Asian Americans ( $B = .85$ ,  $SE = .20$ ,  $p < .01$ ), but not for European Americans ( $B = -.01$ ,  $SE = .27$ ,  $p > .05$ ). There were no significant Ethnicity  $\times$  Negative Emotion Expressivity interactions in predicting daily positive mood and the likelihood of having an argument.

### Tests of Ethnic/Racial Group Differences on Trait Interpersonal and Intrapersonal Functioning

As shown in Figure 2, our findings did not reveal significant interactions of Ethnicity  $\times$  Positive Emotion Expressivity on trait interpersonal and intrapersonal functioning. We found that positive emotion expressivity predicted lower depressive ( $Bs = -.42$  and  $-.58$ ,  $SEs = .11$  and  $.15$ ,  $ps < .05$ , respectively) and social anxiety symptoms ( $Bs = -.51$  and  $-.73$ ,  $SEs = .19$  and  $.26$ ,  $ps < .01$ , respectively), and fewer interpersonal problems ( $Bs = -.02$  and  $-.03$ ,  $SEs = .01$  and  $.01$ ,  $ps < .01$ , respectively) for Asian Americans and European Ameri-

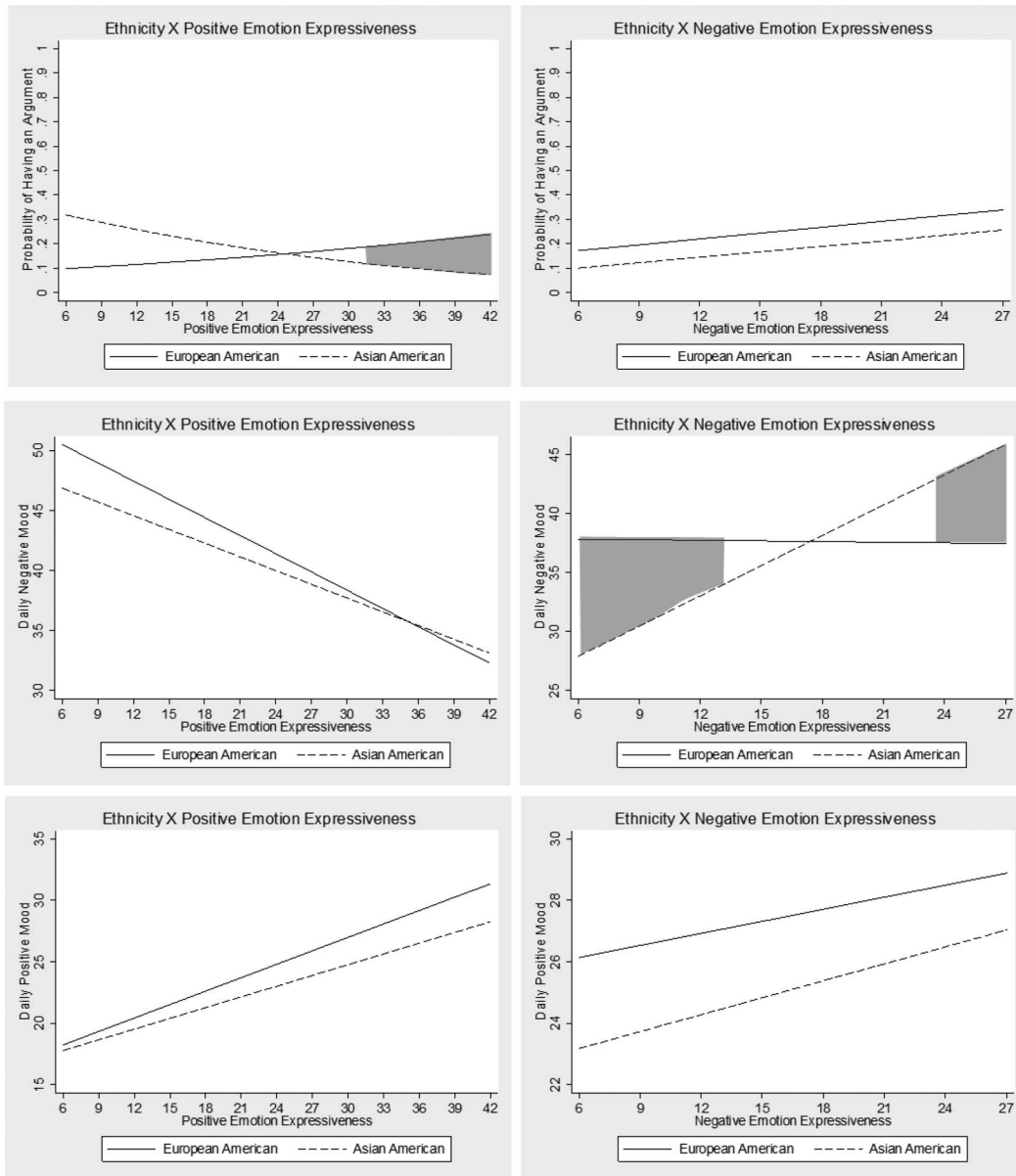


Figure 2. Interaction of Ethnicity  $\times$  Positive/Negative Emotion Expressivity on daily variables controlling for age and gender. Shaded regions represent the area to which the simple slopes of each group become significantly different from each other.

cans. In contrast, the second model found a significant omnibus test of Ethnicity  $\times$  Negative Emotion Expressivity in predicting trait-based functioning. In comparing depressive symptoms, social anxiety symptoms, and interpersonal functioning, depressive symptoms accounted for 7% of the overall variance ( $p = .001$ ), social anxiety symptoms accounted for 4.1% of the variance ( $p = .03$ ), and interpersonal functioning accounted for 2.7% of the variance ( $p = .10$ ). Separate examination of the trait outcomes showed significant interactions of Ethnicity  $\times$  Negative Emotion Expressivity on depressive symptoms ( $F(1, 214) = 6.77, p = .01, \Delta R^2 = 3\%, \eta_p^2 = .03$ ), social anxiety symptom ( $F(1, 214) = 4.51, p < .05, \Delta R^2 = 2\%, \eta_p^2 = .02$ ), and

interpersonal functioning ( $F(1, 214) = 4.40, p < .05, \Delta R^2 = 2\%, \eta_p^2 = .02$ ). Simple slope analyses revealed that negative emotion expressivity predicted greater depressive symptoms ( $B = .52, SE = .16, p < .01$ ) and marginally greater social anxiety symptoms ( $B = .49, SE = .27, p = .06$ ), but was unrelated to interpersonal functioning ( $B = .01, SE = .01, p > .05$ ) for Asian Americans. For European Americans, negative emotion expressivity was unrelated to depressive symptoms ( $B = -.18, SE = .22, p > .05$ ) and social anxiety symptoms ( $B = -.46, SE = .36, p > .05$ ), but had a marginally significant association with interpersonal problems ( $B = -.02, SE = .01, p = .08$ ).



## Tests of Cultural Group Differences on Interpersonal and Intrapersonal Functioning

We conducted several multiple regressions to examine whether self-construals moderated the relations between emotion expression and well-being. Controlling for independent self-construal, ethnicity, age, and gender, we found significant Interdependence  $\times$  Positive Emotional Expressivity interactions in predicting daily positive mood ( $B = .02, SE = .01, p < .01$ ), trait interpersonal problems ( $B = -.001, SE = .0001, p < .05$ ), and depressive symptoms ( $B = -.02, SE = .01, p < .05$ ). In each of these interactions, simple slope analyses showed that individuals who endorsed greater interdependent self-construals also experienced greater daily positive mood ( $B = .38, SE = .09, p < .05$ ), lower trait interpersonal problems ( $B = -.66, SE = .12, p < .05$ ), and lower depressive symptoms ( $B = -.03, SE = .01, p < .05$ ), whereas among those who endorsed lower interdependent self-construals, the relationship between positive emotion expressivity and functioning was not significant. There were no significant Interdependent Self-Construals  $\times$  Positive Emotion Expressivity interactions in predicting daily negative mood, daily interpersonal functioning, and trait social anxiety symptoms. Lastly, contrary to our expectations, there were no significant interactions of Interdependence  $\times$  Negative Emotion Expressivity in predicting the well-being outcomes.

## Discussion

The present study provides the first examination of the functions of positive and negative emotion expressivity on daily and trait interpersonal and intrapersonal functioning across Asian Americans and European Americans. As hypothesized, positive emotion expressivity predicted lower levels of interpersonal problems, depression, social anxiety, and negative mood, and higher levels of daily positive mood for both Asian Americans and European Americans. Also, negative emotion expressivity predicted greater interpersonal problems, depression, social anxiety, and daily negative mood for Asian Americans, but not European Americans. Our results also support our predictions according to culture (i.e., self-construal). Among individuals who are highly interdependent, positive emotion expressivity was associated with greater daily positive mood, lower trait interpersonal problems, and lower depressive symptoms; however, this was not shown for individuals who were less interdependent. Taken together, these findings illustrate the importance of looking not just at emotion expressivity but the *function* of those expressions in different cultural environments, as well as distinguishing between positively- and negatively-valenced expression in studies of ethnicity/race, culture, and emotion.

Contrary to our expectations, Asian Americans did not report lower positive or negative emotion expressivity. The EEQ may not discriminate between low and high arousal states, which would obfuscate the differences that would be expected from affect valuation theory (Tsai, Knutson, et al., 2006). Indeed, ethnic/racial differences in expression may be most pronounced for high arousal positive states (e.g., elation and exuberance).

While our ethnic/racial group analyses clearly illustrate the maladjustment associated with negative emotion expressivity among Asian Americans (but not for European Americans), our

cultural analyses did not show significant associations between negative emotion expressivity and maladjustment among individuals who are highly interdependent. Importantly, this suggests that ethnicity/race does not equate to cultural differences in self-construals (Betancourt & Lopez, 1993). Perhaps interdependent self-construal predicts emotion processes more than they do outcomes related to adjustment-related emotion expressivity because the latter is more multiply determined. Instead, ethnicity/race may be a stronger predictor of functional outcomes as it encompasses more than self-views, including contextual factors such as minority status and stereotyped expectations (Oyserman & Sakamoto, 1997). Perhaps Asian Americans experience penalties associated with negative expressivity rooted not in incongruence with self-views, but rather from intergroup processes pertinent to minority group expectations to be agreeable or submissive.

This study underscores that emotional valence (i.e., positive vs. negative) is an important determinant of outcomes associated with emotion expressivity. Asian Americans and European Americans who tended to express high levels of positive emotion also expressed high levels of negative emotions, but this relationship is significantly stronger for European Americans than Asian Americans. Thus, patterns of emotion expressivity may be shaped by cultural context. For European Americans, the tendency to be expressive seems to be more emotion-general; for Asian Americans, expressivity may be more dependent on valence (Boiger & Mesquita, 2012).

Second, the overall pattern suggests that negative emotion expressivity was associated with poorer intrapersonal and interpersonal well-being among Asian Americans, but not for European Americans. Although we cannot make causal conclusions, the expression of negative emotions among Asian Americans may reflect that of distressed individuals who have difficulty conforming to cultural norms of emotion suppression (Chentsova-Dutton et al., 2007). In contrast, negative emotion expression may be culturally sanctioned for European Americans as a form of self-assertion; certainly, our finding that positive and negative emotion expressivity were closely linked for European Americans (but not for Asian Americans) supports this notion of emotion-general expressivity. Alternatively, it is also plausible that negative emotion expressivity precedes existing interpersonal and intrapersonal distress. As previously noted, violation of the cultural priority on emotion control through the expression of negative emotions may endanger social harmony and strain relationships among Asian Americans (e.g., Wang et al., 2010).

While adjustment correlates of negative emotion expressivity differed between groups positive emotion expressivity was associated with well-being for both groups. According to the broaden-and-build theory of positive emotions (Fredrickson, 2001), experiences of positive emotions broadens people's abilities to experience their present situation, which serves to build longer-lasting social and psychological resources. Indeed, we found that among those who prioritize their social connections (i.e., are highly interdependent), positive emotion expressivity was associated with well-being. Thus, positive emotion expressivity may not just reflect well-being, but may also promote social cohesion and closeness. This dovetails with findings from Burgin et al. (2012) that individuals with higher levels of emotion expressivity were more likely to be interacting with others and endorse greater levels of subjective well-being.

Our findings suggested that Asian Americans who endorsed low negative emotion expressivity had greater well-being than Asian Americans who endorsed high negative emotion expressivity. Although speculative, the Asian Americans who endorsed low levels of negative emotion expressivity may be engaging in greater emotion suppression (i.e., low expressivity may imply greater emotion suppression). Indeed, Butler and her colleagues (Butler, Lee, & Gross, 2007) found that whereas emotion suppression led to negative social interactions among women who held more European American values, the harmful effects on interpersonal functioning were significantly attenuated when women held more East Asian values. Moreover, Cheung and Park (2010) found that the association between emotion suppression and depression was attenuated among Asian Americans, but not so for European Americans.

Our study has several limitations. Although our data revealed no significant heteroscedasticity across groups, the relatively small number of European Americans compared to Asian Americans may have contributed to their nonsignificant simple effects. Relatedly, although we were primarily interested in looking at general ethnic/racial differences between Asian Americans and European Americans, it is important to appreciate the within-group heterogeneity in terms of ethnic/racial subgroups (e.g., Chinese, Korean, & Japanese) and acculturation level within Asian Americans. Because acculturative differences among Asian Americans in emotional meaning and perception have been previously identified (Liem, Lim, & Liem, 2000), future studies would profit from a closer examination of these acculturative processes. Second, we relied on self-report to assess both expressivity and functioning. Because cultural norms can shape these reports (Okazaki, 1997), future studies should examine biomarkers as additional predictors of functioning and behavioral measures of emotion expression for better construct validity. Another measurement limitation was that daily interpersonal functioning was assessed with a single item on the occurrence of daily arguments. Future studies should include a wider range of daily interpersonal interactions (e.g., support-seeking behavior). Lastly, Asian Americans completed more daily diaries than European Americans in our sample. The high overall response rate is a strength of the current data, but this may also suggest biases in participants' response (e.g., oversampling).

Despite these limitations, the present study assessed the functional differences in positive and negative emotion expressivity across Asian Americans and European Americans with daily level as well as trait level indicators of maladjustment. One main contribution of this study was distinguishing between positive and negative emotional valence. Indeed, the findings converged to demonstrate that the expressions of negative emotions, but not positive emotions, were associated with maladjustment for Asian Americans, but not for European Americans. Future studies (e.g., laboratory-based experiments) that distinguish between positive and negative emotion valence are needed to strengthen the validity of the findings, and to elucidate the causal relations of the emotion expression and maladjustment link.

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