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Ethnicity Moderates the Benefits of Perceived Support and Emotional Expressivity on Stress Reactivity for Asian Americans and Euro Americans

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Objective: This study examined whether ethnicity moderated the benefits of perceived support and emotion expressivity on stress responses (cortisol, negative mood, task performance) during a lab stress task for Asian Americans and Euro Americans. We hypothesized that perceived support and emotion expressivity would be less beneficial for Asian Americans (relative to Euro Americans), for whom support seeking and emotional expressivity are less aligned with cultural values. ***Method:*** A majority female sample (72%) of 83 Asian American (first generation, $n = 30$; second generation, $n = 53$) and 50 Euro American college students completed the Trier Social Stress Test. Participants provided baseline and poststressor measures of salivary cortisol and negative mood, and their task performance was coded by researchers. ***Results:*** Results showed evidence of ethnic group moderation such that perceived support and emotional expressivity did not buffer biological, psychological, or behavioral stress outcomes for Asian Americans, but did offer some benefits to Euro Americans. The two groups differed on interdependence and acculturation, yet there was limited evidence that cultural variables moderated those same associations. ***Conclusions:*** Results counter the notion that perceived support and emotion expressivity are universal psychosocial resources for managing stress. This study highlights the importance of considering ethnic group differences in these socioemotional processes that are relevant for better understanding adaptive coping and well-being.

Keywords: ethnicity, social support, emotion expressivity, stress, cortisol

The well-being and health advantages of social support have been widely documented and include benefits to immune, cardiovascular, and neuroendocrine function; decreased depression and anxiety; and effective buffering against the negative effects of stress (Cohen, 2004; Seeman, 1996). Unsurprisingly, individuals who report better support also describe better relationship satisfaction and functioning (e.g., Gleason, Iida, Shrout, & Bolger, 2008). Defined as the perception or experience that one is loved and cared for, esteemed and valued, and part of a network of mutual assistance and obligation (Wills, 1991), research has further indicated that *perceived support* (i.e., perception that support is available if needed) has been more consistently related to well-being benefits than has *received support* (i.e., enacted support) that may be complicated by ineffectiveness and the psychosocial costs of requesting support (e.g., blows to self-esteem; Bolger, Zuckerman, & Kessler, 2000; Uchino, 2009).

Researchers who study stress and social support have focused on the hypothalamic-pituitary-adrenal (HPA) axis—a chief stress regulatory system—and its hormonal end-product cortisol because of its sensitivity to social experiences (Wang & Campos, 2017). Some studies have shown that greater perceived support helps to buffer short-term biological stress reactivity to acute lab stressors. For example, Eisenberger, Taylor, Gable, Hilmert, and Lieberman (2007) found that perceptions of overall support over 10 days were associated with lower cortisol reactivity in the lab. In addition, higher levels of perceived support from family members (but not peers) attenuated cortisol reactivity to a lab stressor for sexual minority youth (Burton, Bonanno, & Hatzenbuehler, 2014), and perceived support was found to buffer cortisol responses to a lab stressor in a sample of U.S. Latinos but, notably, not for Asian Americans (Campos, Yim, & Busse, 2018).

Furthermore, *emotion expressivity* is another widely studied psychosocial construct that is closely related to social functioning. In particular, expressing feelings has been viewed as inherent in the solicitation of help or comfort (Fleming, Baum, Gisriel, & Gatchel, 1982). Emotions not only guide interpersonal behavior—their expression (or suppression) can have important consequences for relationships, health, and well-being (e.g., Gross & John, 2003; Keltner & Kring, 1998). Open and direct emotional expression is touted as an adaptive quality for meeting needs for assertion, personal expression, and the affirmation of individuality in West-

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ern societies (Kim & Sherman, 2007). This is borne out in studies using undergraduate Western samples demonstrating that dispositional expressiveness strongly predicts better psychological well-being (e.g., Burgin et al., 2012; Kring, Smith, & Neale, 1994).

Although studies with Western samples have typically presumed cultural universality in the psychosocial benefits of perceived support and emotion expressivity, cultural research provides another perspective that challenges this notion. Highly informative is the key cultural psychology construct of individualism-collectivism (e.g., Hofstede, 1980; Shweder & Bourne, 1984). This framework broadly contrasts two kinds of cultural orientations: individualistic cultures, such as those in Western Europe and North America that tend to view the self as independent, autonomous, and motivated primarily by personal goals to assert the self, and collectivistic cultures, such as those in Asia that tend to construe the self as an interdependent entity embedded in a web of social connections that prioritizes group goals (Markus & Kitayama, 1991; Triandis, 1994). Self-construal is thought to shape social support and emotion processes, influencing whether relationships are viewed as freely chosen or characterized by obligation and desire for group harmony (Kim, Sherman, & Taylor, 2008).

We emphasize that these are general cultural distinctions painted in broad theoretical strokes, and that cultures are fluid, complex, and dynamic systems. Indeed, studies have documented more within-group variation than between-groups variation on many psychological traits (e.g., Adams & Markus, 2004; Levy, Plaks, Hong, Chiu, & Dweck, 2001) as well as noted limitations to essentialist assumptions about individualism-collectivism differences across groups (see Oyserman, Coon, & Kemmelmeier, 2002). Additionally, recent work has further explored distinctions within collectivism, noting a harmony collectivism more reflective of Asian values prioritizing emotional restraint and group harmony as being distinct from a convivial collectivism that values open and positive emotion expression characteristic of many Latino cultures (Campos & Kim, 2017). Nevertheless, these broad cultural distinctions are helpful orienting frameworks for better understanding the influence of culture on basic psychosocial processes relevant for relationships, health, and well-being. The current analysis examines whether the benefits of perceived support and emotion expressivity for stress reactivity are diminished for Asian Americans relative to Euro Americans.

Ethnic and Cultural Differences on Social Support and Its Links With Health and Well-Being

Although studies have documented the helpful buffering effects of social support on health and well-being in Asian American samples for culture and ethnicity-related stressors (e.g., discrimination; Wei, Yeh, Chao, Carrera, & Su, 2013), a robust body of evidence has also shown that the general benefits of active support use may be less pronounced for Asians and Asian Americans. Specifically, relative to Euro Americans, Asians and Asian Americans have been found to be less likely to activate support, and when they do, it has diminished effects (see Kim et al., 2008, for a review). For example, not only are Koreans (Taylor et al., 2004), Chinese (Mortenson, 2006) and Asian Americans less likely to endorse the use of social support as a preferred coping strategy (Kim, Sherman, Ko, & Taylor, 2006; Taylor et al., 2004)—Asian Americans also report less daily use of support (Wang, Shih, Hu, Louie, & Lau, 2010), find daily support to be less effective (Wang et al., 2010), and show increased cortisol and negative mood following explicit requests for support (Taylor, Welch, Kim, & Sherman, 2007). For Asians and Asian Americans, the costs of mobilizing social support may be attributed to culturally rooted relationship concerns, such as loss of face and the preservation of social harmony (e.g., Taylor et al., 2004; Wang & Lau, 2015; Wang et al., 2010).

Although perceived support and enacted support are separate but related constructs, it is likely that the potential costs of mobilizing support may still be activated for Asian Americans during cognitive appraisals of support availability for which relational concerns may still govern the anticipated need for activating available support. In line with this notion, we note that prior work has found that perceived social support did not buffer stress reactivity to a lab stressor in a sample of Asian Americans (Campos et al., 2018). The fact that implicit support (i.e., the act of drawing comfort by merely reflecting on one's relationships) has been shown to be stress-buffering (Taylor et al., 2007), whereas perceived support (i.e., the perception of one's relationships as offering support if needed) has not shown such benefits for Asian Americans (Campos et al., 2018), would suggest that the cognitive process of identifying and encoding available support may be similarly misaligned with collectivistic values. Thus, we examine ethnic moderation of perceived support's links with stress responding.

Ethnic and Cultural Differences on Emotion Expressivity and Its Links With Health and Well-Being

Scholars have noted that in collectivistic cultures, particularly East Asian contexts, emotions are viewed as potentially risky for disrupting social harmony, and therefore emotional restraint and suppression are prioritized (Butler, Lee, & Gross, 2007; J. L. Tsai, 2007). Cross-national differences in endorsement of expressive displays have been found in individualistic versus collectivistic countries (Matsumoto, Yoo, & Fontaine, 2008), and dampened expressions of self-reported, biological, and behavioral emotion experiences in response to lab stimuli have been observed in Asian Americans relative to Euro (Mauss, Butler, Roberts, & Chu, 2010; Soto, Lee, & Roberts, 2016) and Mexican Americans (Soto, Levenson, & Ebling, 2005). In a daily diary study, Asian Americans were less likely than Euro Americans to use support, which was partially explained by harmony values via emotional restraint (Wang et al., 2010).

Findings from multiple studies have countered the Western notion of emotion expressivity as a universal psychosocial resource and, conversely, emotion suppression as a universal psychosocial disadvantage for health and well-being outcomes. Studies have more broadly found either an attenuated or null association between emotion expressivity (or emotion suppression) and self-reported well-being outcomes for Asians and Asian Americans compared with Euro and Mexican Americans, for whom beneficial (for expression) and detrimental (for suppression) associations have been consistently identified (e.g., Butler et al., 2007; Kang, Shaver, Sue, Min, & Jing, 2003; W. Tsai, Nguyen, Weiss, Ngo, & Lau, 2017). However, emotional valence needs to

be considered; at least one study has found that negative expressivity, in particular, is detrimental for well-being among Asians and Asian Americans (W. Tsai, Sun, Wang, & Lau, 2016). We note that none of the aforementioned studies examined emotion expressivity and its links with general stress reactivity, as opposed to specific emotion regulation tasks in the lab, across different groups. Thus, the current analysis aims to better understand whether the benefits of emotion expressivity on stress reactivity are moderated by ethnicity, and whether any ethnic variation in these processes can be explained by cultural variables.

The Current Study

To our knowledge, this is the first study to examine ethnic moderation of the links between perceived support and emotion expressivity with stress reactivity for Asian Americans and Euro Americans using a multimethod assessment of stress responses yielding biological (i.e., cortisol reactivity), psychological (i.e., negative mood reactivity), and behavioral (i.e., task performance) stress data. We had the following hypotheses and research question:

Hypothesis 1 (H1): Ethnic group should moderate the association between perceived support and stress responding. Specifically, Asian Americans should experience less benefit from perceived support than Euro Americans.

Hypothesis 2 (H2): Ethnic group should moderate the association between emotional expressivity and stress responding. Specifically, Asian Americans should experience less benefit from expressivity than Euro Americans.

Research question (RQ): Does replacing ethnic group as the moderator with specific cultural variables (for which ethnic group differences are demonstrated) yield similar results?

Method

Participants

The sample was comprised of 50 Euro American and 83 Asian American (first generation, $n = 30$; second generation, $n = 53$) college students at a large state university in California. The average age of participants was 20.41 years ($SD = 2.37$), and 72.2% were female. The majority of participants had mothers (86% Euro American, 66% Asian American) and fathers (84% Euro American, 66% Asian American) who completed at least some college. Eligibility criteria included self-identification as nonimmigrant (i.e., third generation or later) Euro American/White, or self-identification as immigrant (i.e., first or second generation) Asian/Asian American of East Asian ancestry (i.e., Chinese, Korean, Japanese). These criteria helped to ensure that Euro American participants came from individualistic cultural backgrounds, and that Asian American participants were reared by parents from collectivistic cultural backgrounds typical of Confucian-based East Asian societies. Participants were recruited from psychology courses as well as via fliers and e-mails, and they received either course credit or a small monetary reward. A brief phone screen was conducted to exclude individuals with an endocrine disorder; anxiety or depressive disorder; autoimmune, blood, or metabolic disease; cancer; serious allergies or asthma; cardiovascular condition; and if they were pregnant, taking hormonal contraceptives, or had breast-fed in the last 6 months.

Procedure

Participants were instructed to avoid eating and drinking in the 30 min before, and to avoid dairy products in the 3 hr before, the study. All sessions were scheduled between 2:00 p.m. and 6:00 p.m. given cortisol's circadian rhythm (Kudielka, Schommer, Hellhammer, & Kirschbaum, 2004). At baseline, participants completed a mood measure and provided a saliva sample.

Researchers then instructed participants on the upcoming Trier Social Stress Test (TSST; Kirschbaum, Pirke, & Hellhammer, 1993), a widely used lab stressor paradigm composed of a mental arithmetic and speech task completed in front of a panel of judges. The TSST has been shown to reliably activate short-term and safe biological (i.e., cortisol) and psychological (Dickerson & Kemeny, 2004) stress responses. Participants were given 3 min to prepare a 5-min speech about why they would be a good candidate for an administrative assistant position in the psychology department. After this speech preparation period, participants spent 3 min writing a letter to a close other asking for help with the upcoming speech and arithmetic tasks.[1] Participants then engaged in the TSST lab stressor tasks in front of two confederate judges (one male, who female) who were racially matched with the participant. Participants first gave their speech and then were asked to count aloud backward from 2,083 by 13 for 5 min. Judges were dressed in white lab coats, used clipboards, and applied pressure to participants using scripted phrases such as "please continue" when participants paused, as well as corrected math errors.

After the TSST, participants immediately completed a poststressor measure of mood. Given the documented 20 to 25 min length of time required for the body to mount a cortisol response (Kirschbaum et al., 1993), participants were asked to sit quietly until 25 min after the start of the TSST, at which time the poststressor saliva sample was self-collected.[2] Last, participants completed questionnaires on perceived social support and emotional expressivity.

Cortisol Assay

Participants self-collected their salivary cortisol samples (under supervision) using prepackaged sterile cotton oral swabs and plas-

[1] This study is a secondary data analysis of unpublished data taken from an unsuccessful experiment examining whether exposure to different reading material would buffer stress reactions to the TSST. After the speech preparation period, participants were asked to read a short article and to underline the verbs in that article. One-way ANOVA showed that there was no main effect of article type on any of the outcomes examined in this analysis: cortisol change/reactivity, $F(3, 100) = .322$, $p = .810$, $\eta^2 = .01$; negative mood change/reactivity, $F(3, 129) = 1.415$, $p = .241$, $\eta^2 = .01$; coded speech performance, $F(3, 120) = .795$, $p = .499$, $\eta^2 = .04$. Thus, we examined data from participants pooled across all article conditions in this secondary data analysis.

[2] Thus, participants provided two saliva samples, one at baseline and one at 25 min after stressor onset.

tic storage tubes. Samples were immediately frozen and later shipped under climate-controlled conditions to Salimetrics LLC (State College, PA), a reputable research facility that specializes in saliva immunoassay testing. Assays were conducted using a highly sensitive enzyme immunoassay approved by the U.S. Federal Drug Administration (510k) for use as an in vitro diagnostic measure of adrenal function (Salimetrics). The average of duplicate assays was used in all analyses. Units are reported in μg/dl (micrograms per deciliter), and we performed a log transformation on all salivary cortisol values to correct for skew. To assess biological stress reactivity, we calculated a change score by subtracting baseline from poststressor cortisol. Larger change scores indicate a greater increase in cortisol levels.

Behavior Coding

Video recordings of participants' speeches were coded for overall speech performance to provide a behavioral indicator of how well participants performed under stressful circumstances on a presentation task. Specifically, coders assessed how relevant and convincing the speech content was on a 1 (*very poor*) to 5 (*excellent*) scale. Speeches that included mention of the applicant's interpersonal skills, administrative and organizational skills, and experience in psychology would contribute to a higher score. Coders were blind to study hypotheses, and reached a high interrater reliability (intraclass correlation coefficient [ICC] = .93) on 20 training videotapes (16% of total video) prior to formal coding. Each video was coded by two coders (one Euro American, one Asian American), who first coded the video independently and then met to reconcile discrepancies with their partner (ICCs > .80). Weekly team meetings addressed coding issues. Only reconciled codes were used for analyses.

Measures

Mood. At baseline and poststressor time points, participants completed the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) which is comprised of 20 items assessing various emotions on a 1 (*very slightly or not at all*) to 5 (*extremely*) scale. Both Positive Affect (e.g., "strong," "determined") and Negative Affect ("distressed," "irritable") subscales have demonstrated strong internal consistency and convergent validity with measures of depression and anxiety (Watson et al., 1988). In the current sample, Cronbach's alpha was strong for both positive (Asian American = .91–.93, Euro American = .82–.91) and negative affect (Asian American = .78–.84, Euro American = .78–.89). We calculated a change score by subtracting baseline from poststressor negative affect.

Perceived support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is comprised of 12 items that assess perceptions of available support that can be further broken down into subscales for specific relationships (e.g., Family, Friends, Significant Other). Items such as "My family really tries to help me" and "I can talk about my problems with my friends" are scored on a 1 (*very strongly disagree*) to 7 (*very strongly agree*) scale. The MSPSS has shown strong internal consistency in United States (Zimet et al., 1988) and Hong Kong samples (Tonsing, Zimet, & Tse, 2012), and has been found to correlate negatively with measures of depression and anxiety in those samples. Cronbach's alphas were strong in the current sample (Asian American = .88–.96, Euro American = .86–.93).

Emotional expressivity. The Emotional Expressiveness Questionnaire (King & Emmons, 1990) is comprised of 16 items assessing the strength and openness of one's emotion displays. Items such as "People can tell from my facial expressions how I am feeling" and "I always express disappointment when things don't go as I'd like them to" are scored on a 1 (*not at all*) to 7 (*extremely*) scale. The scale has demonstrated internal consistency and negative correlations with measures of emotional inhibition and aggression control (King & Emmons, 1990). In our sample, Cronbach's alpha was .80 for Asian Americans and .73 for Euro Americans.

Self-construal. The Self-Construal Scale (SCS; Singelis, 1994) consists of 24 items measuring independent self-construal, a view of the self as a separate and autonomous entity from one's social group (e.g., "I act the same way, no matter who I am with"), and interdependent self-construal (e.g., I will stay in a group if they need me, even if I am not happy with the group"), a view of the self as fundamentally embedded in a web of social connections. Responses are made on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The SCS has been shown to have good internal consistency and concurrent validity with other measures of individualism-collectivism and social harmony (Singelis, Triandis, Bhawuk, & Gelfand, 1995). Cronbach's alpha in the current sample for interdependent self-construal was .58 for Euro Americans and .60 for Asian Americans, and for independent self-construal was .69 for Euro Americans and .74 for Asian Americans.

Harmony values. The Harmony Values Scale (HVS; Wang et al., 2010) is comprised of two subscales that assess other-focused valuation of group harmony, with Emotion Harmony measuring restraint of emotional expression (e.g., "It is better to hold one's emotions inside than to burden others by expressing them"), and Social Harmony measuring regulation of social-communicative behavior ("Even when I strongly disagree with someone close to me, I avoid an argument"). Responses are rated on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. Prior work has found the HVS to have good concurrent validity with interdependent self-construal (Wang et al., 2010). Cronbach's alpha demonstrated adequate internal reliability in the current sample for Social Harmony (Asian American = .68, Euro American = .78) and Emotion Harmony (Asian American = .75, Euro American = .72).

Acculturation. The Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000) is a 20-item questionnaire measuring acquisition of new cultural tendencies from the host culture and retention of heritage culture tendencies, yielding two subscores. Participants respond to items such as "I enjoy social activities with typical American people" and "I believe in the values of my [heritage] culture" on a 1 (*disagree*) to 9 (*agree*) scale. The VIA demonstrates acceptable internal consistency, and convergent validity has been found with percentage of time spent living in different cultures (Ryder et al., 2000). Cronbach's alpha was strong in the current sample for heritage (Asian American = .85, Euro American = .87) and mainstream acculturation (Asian American = .84, Euro American = .84).

Table 1
Sample Descriptives and Ethnic Group Differences on Study Variables

Study variables	All			Asian Americans			Euro Americans			Independent samples *t* test	Cohen's *d*
	N	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*		
Perceived social support											
Overall	133	5.76	1.05	83	5.57	1.06	50	6.08	.97	2.753**	.50
Family	133	5.51	1.42	83	5.22	1.42	50	5.98	1.28	3.095**	.56
Friends	133	6.03	.92	83	5.94	.90	50	6.18	.93	1.469	.26
Emotional expressivity	133	4.60	.77	83	4.51	.80	50	4.74	.68	1.736[a]	.31
Stress outcomes											
Cortisol reactivity[b]	132	.15	.22	82	.15	.23	50	.15	.22	−1.28	.00
Negative mood reactivity[c]	133	.55	.64	83	.53	.57	50	.59	.75	.532	.09
Coded speech performance	124	3.15	.93	78	3.09	.91	46	3.24	.95	.867	.16
Cultural variables											
Interdependent self-construal	133	4.91	.57	83	4.98	.55	50	4.79	.58	−1.862[a]	.34
Independent self-construal	133	4.51	.73	83	4.43	.74	50	4.64	.71	1.617	.29
Heritage acculturation	133	3.75	.73	83	3.92	.61	50	3.48	.82	−3.535***	.61
Mainstream acculturation	133	3.95	.63	83	3.76	.59	50	4.26	.58	4.688***	.85
Social harmony value	133	4.15	.96	83	4.25	.86	50	3.99	1.10	−1.550	.26
Emotion harmony value	133	3.85	1.02	83	3.87	1.02	50	3.84	1.02	−.159	.03

[a] $p \leq .10$. [b] Cortisol reactivity was calculated as the poststressor cortisol value minus the baseline cortisol value. We report regular (untransformed) values here for interpretability; however, as noted in the manuscript, log-transformed cortisol values ($n = 104$) were used to correct for skew in the study analyses. [c] Negative mood reactivity was calculated as the poststressor negative mood value minus the baseline negative mood value.
** $p \leq .01$. *** $p \leq .001$.

Results

Preliminary Analyses

Table 1 displays all sample descriptives and ethnic group difference tests. Regarding perceived support, Asian Americans perceived significantly less overall social support than did Euro Americans; this pattern was also reflected on the Family, but not Friends, subscales. On emotional expressivity, Asian Americans scored marginally lower than Euro Americans. For stress outcomes, there were no differences between Asian Americans and Euro Americans on negative mood and cortisol reactivity or on coded speech performance. On the culture variables, Asian Americans scored marginally higher than Euro Americans on interdependent self-construal, but no significant differences were found on independent self-construal or social or emotion harmony values. Asian Americans were significantly higher on heritage acculturation, whereas Euro Americans were significantly higher on mainstream acculturation.

Table 2 displays bivariate correlations among all main study variables separately for Asian Americans and Euro Americans. Emotional expressivity was correlated with perceived overall support for Euro Americans but not Asian Americans. The patterns among stress variables were similar for Asian Americans and Euro Americans who showed significant or marginally significant correlations between cortisol and negative mood but null associations between speech performance with both cortisol and negative mood.

Analytic Approach

A series of hierarchical multiple regression analyses tested the hypothesis that ethnic group would moderate the associations between

Table 2
Bivariate Correlations Among Study Variables

Study variables	1	2	3	4	5	6	7	8	9	10	11
1. Overall perceived support	—	.17	.16	.05	−.12	.02	.15	.25*	.02	−.11	−.26*
2. Emotional expressivity	.32*	—	−.02	.03	.25*	.04	.30**	−.15	.22*	−.24*	−.29**
3. Cortisol reactivity	−.27[a]	.46**	—	.21[a]	.07	−.06	.10	.05	−.14	.02	.20
4. Negative mood reactivity	−.17	−.11	.33*	—	−.15	.03	−.05	−.03	.04	.06	.03
5. Coded speech performance	.25[a]	.10	−.16	−.17	—	−.05	.09	.02	.27*	−.22	−.26*
6. Interdependent self-construal	.19	.17	.12	.22	.06	—	.00	.05	−.02	.49***	.29**
7. Independent self-construal	−.02	.19	−.23	−.13	−.13	.11	—	.10	.33**	−.30**	−.21
8. Heritage acculturation	.26[a]	.24[a]	−.18	.12	−.10	.27[a]	.23	—	.10	.14	.06
9. Mainstream acculturation	.59***	.18	.09	.04	.19	.22	.04	.15	—	−.08	−.12
10. Social harmony value	.10	−.05	.13	.29*	.12	.67***	−.14	.26[a]	.16	—	.45***
11. Emotion harmony value	−.39**	−.43**	.21	.04	.11	.05	−.09	−.03	−.18	.22	—

Note. Values above the diagonal reflect correlations for Asian Americans, values below the diagonal reflect correlations for Euro Americans.
[a] $p \leq .10$.
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

perceived support and stress reactivity (H1), and between emotional expressivity and stress reactivity (H2). In Step 1, two variables were entered into the model to test main effects: ethnic group and the hypothesized predictor variable (perceived support or emotional expressivity). In Step 2, the interaction between the hypothesized predictor variable (perceived support or emotional expressivity) and ethnic group was entered into the model to test the interaction effect. Predictor and moderator variables were centered. The outcome variable for each model was one of the three stress outcome variables: cortisol reactivity, negative mood reactivity, coded speech performance. Three models were run with emotional expressivity as predictor, and three models were run for perceived overall support as predictor. In a follow-up step, we display results for perceived support using the two support subscales most relevant for a college sample (Family, Friends) in order to examine how the specific support source may shape stress reactivity. To better understand significant moderation, we conducted post hoc subgroup regression analyses (Aiken & West, 1991).

Next, a similar set of multiple regression analyses was conducted to test our research question on whether cultural variables acted as moderators in place of ethnic group in the links between perceived support or emotional expressivity with stress outcomes. We focused on interdependent self-construal and heritage and mainstream acculturation (for which marginal or significant ethnic group differences were found) as moderators. These three culture variables substituted for ethnic group in the four models that were shown to be significant from the H1 and H2 models in which ethnic group was the moderator, resulting in a total of 12 models.

H1: Ethnic Group as Moderator of the Links Between Perceived Support and Stress Responding

The results of the ethnic group moderation analyses with perceived support as the predictor, and cortisol reactivity, negative mood reactivity, and coded speech performance as stress outcome variables, are presented in Table 3. Findings show that ethnic group significantly moderated the association between perceived overall support and cortisol reactivity ($\beta = 1.23$, $p = .043$, $f^2 = .04$). Simple slope analyses revealed nonsignificant associations between perceived overall support and cortisol reactivity for Euro Americans ($\beta = -.27$, $p = .095$) and Asian Americans ($\beta = .16$, $p = .214$; see Figure 1).

Although ethnic group did not moderate the association between perceived overall support and negative mood reactivity ($\beta = .71$, $p = .170$), a post hoc analysis determined there was a significant ethnicity moderation effect when specifically considering perceived *family support* ($\beta = .89$, $p = .018$, $f^2 = .05$). Simple slope

Table 3
Multiple Regression Analyses Testing Ethnic Group as a Moderator in the Association Between Perceived Social Support and Stress Reactivity

Study variables	*B*	*SE B*	β	ΔR^2	*F*
Cortisol reactivity					
Step 1: Main effects					
Ethnic group	−.04	.13	−.03		
Perceived support – Overall	.01	.06	.02	.00	.09
or Perceived support – Family	.01	.05	.02	.00	.09
or Perceived support – Friends	−.06	.07	−.08	.01	.39
Step 2: Interaction					
Ethnic group × Perceived support – Overall	.27	.13	1.23*	.04	4.21*
or Ethnic group × Perceived support – Family	.18	.10	.78[a]	.03	3.15[a]
or Ethnic group × Perceived support – Friends	.13	.14	.59	.01	.78
Negative mood reactivity					
Step 1: Main effects					
Ethnic group	−.07	.12	−.05		
Perceived support – Overall	−.03	.06	−.04	.00	.25
or Perceived support – Family	−.03	.04	−.07	.01	.47
or Perceived support – Friends	.02	.06	.03	.00	.21
Step 2: Interaction					
Ethnic group × Perceived support – Overall	.16	.12	.71	.02	1.90
or Ethnic group × Perceived support – Family	.21	.09	.89**	.04	5.74**
or ethnic group × Perceived support – Friends	.13	.13	.62	.01	1.11
Coded speech performance					
Step 1: Main effects					
Ethnic group	−.15	.18	−.08		
Perceived support – Overall	.01	.08	.01	.01	.38
or Perceived support – Family	−.02	.06	−.02	.01	.40
or Perceived support – Friends	.10	.09	.09	.01	.88
Step 2: Interaction					
Ethnic group × Perceived support – Overall	−.35	.17	−1.07*	.03	4.10*
or Ethnic group × Perceived support – Family	−.24	.13	−.74*	.03	3.72*
or Ethnic group × Perceived support – Friends	−.26	.19	−.84	.02	1.85

Note. Ethnic group: 0 = Euro Americans, 1 = Asian Americans. $n = 104$ for Cortisol reactivity; $n = 133$ for Negative mood reactivity; $n = 124$ for Coded speech performance.
[a] $p \leq .10$.
* $p \leq .05$. ** $p \leq .01$.

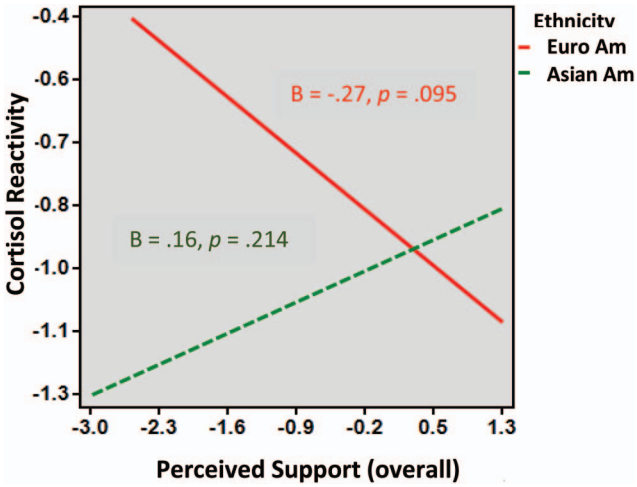

Figure 1. Ethnic group as a moderator of the association between perceived support and cortisol reactivity. See the online article for the color version of this figure.

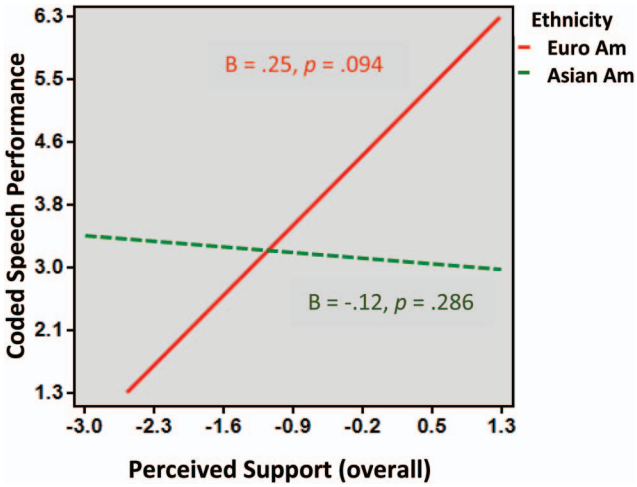

Figure 3. Ethnic group as a moderator of the association between perceived support and coded speech performance. See the online article for the color version of this figure.

analyses showed a significant negative association between perceived family support and negative mood reactivity for Euro Americans ($\beta = -.29$, $p = .038$) but a null association for Asian Americans ($\beta = .08$, $p = .448$; see Figure 2).

Last, ethnicity moderated the association between perceived overall support and coded speech performance ($\beta = -1.07$, $p = .045$, $f^2 = .03$). Simple slope analyses found a marginal association between perceived overall support and coded speech performance for Euro Americans ($\beta = .25$, $p = .094$) and a null association for Asian Americans ($\beta = -.12$, $p = .286$; see Figure 3).

H2: Ethnic Group as Moderator of the Links Between Expressivity and Stress Responding

The results of the ethnic group moderation analyses with emotional expressivity as the predictor, and cortisol reactivity, negative mood reactivity, and coded speech performance as stress outcome variables, are presented in Table 4. Results demonstrated that ethnic group moderated the association between emotional expressivity and cortisol reactivity ($\beta = 1.59$, $p = .023$, $f^2 = .08$). Simple slope analyses showed a strong negative association between emotional expressivity and cortisol for Euro Americans ($\beta = -.46$, $p = .003$) but a null association for Asian Americans ($\beta = -.02$, $p = .902$; see Figure 4). However, ethnic group did not moderate the associations between emotional expressivity and negative mood reactivity ($\beta = .51$, $p = .375$) or emotional expressivity and coded speech performance ($\beta = .37$, $p = .535$).

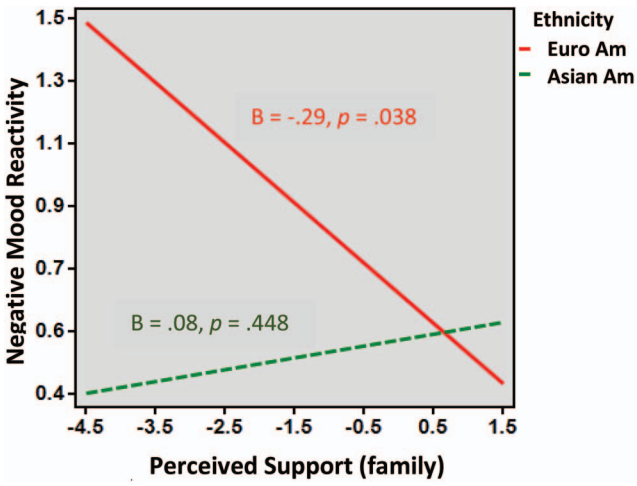

Figure 2. Ethnic group as a moderator of the association between perceived support (family) and negative mood reactivity. See the online article for the color version of this figure.

RQ: Interdependent Self-Construal and Acculturation as Moderators of the Links Between Perceived Support or Emotional Expressivity With Stress Responding

There was very limited evidence that culture acted as a moderator in the four models from H1 and H2 that showed significant moderation by ethnic group. Of 12 models tested, there was only one significant moderation finding by culture: Interdependent self-construal moderated the association between perceived overall support with cortisol reactivity ($\beta = .24$, $p = .016$, $f^2 = .06$).[3] Simple slope analyses found marginal associations between perceived overall support and cortisol at one standard deviation above ($\beta = .24$, $p = .070$) but null associations at one standard deviation

[3] There was no evidence that interdependent self-construal moderated the associations between perceived overall support with negative mood reactivity ($\beta = .09$, $p = .301$) and coded speech performance ($\beta = -.02$, $p = .848$). Additionally, neither acculturation to heritage nor mainstream culture showed significant moderation of the links between perceived overall support with cortisol ($\beta = -.04$, $p = .708$ and $\beta = .16$, $p = .126$, respectively), negative mood ($\beta = .04$, $p = .665$ and $\beta = -.05$, $p = .593$, respectively), or coded speech performance ($\beta = -.12$, $p = .207$ and $\beta = .03$, $p = .764$, respectively). Last, none of the cultural variables—interdependence, heritage acculturation, or mainstream acculturation—were found to moderate the associations between emotional expressivity with cortisol reactivity ($\beta = .11$, $p = .271$; $\beta = -.07$, $p = .463$; $\beta = -.03$, $p = .785$, respectively).

Table 4
Multiple Regression Analyses Testing Ethnic Group as a Moderator in the Association Between Emotional Expressivity and Stress Reactivity

Study variables	*B*	*SE B*	β	ΔR^2	*F*
Cortisol reactivity					
Step 1: Main effects					
Ethnic group	−.08	.13	−.06		
Emotional expressivity	−.13	.09	−.15	.02	1.16
Step 2: Interaction					
Ethnic group × Emotional expressivity	.44	.19	1.59*	.05	5.30*
Negative mood reactivity					
Step 1: Main effects					
Ethnic group	−.07	.12	−.05		
Emotional expressivity	−.02	.08	−.02	.00	.18
Step 2: Interaction					
Ethnic group × Emotional expressivity	.15	.16	.51	.01	.79
Coded speech performance					
Step 1: Main effects					
Ethnic group	−.11	.17	−.06		
Emotional expressivity	.25	.11	.20*	.05	2.94[a]
Step 2: Interaction					
Ethnic group × Emotional expressivity	.15	.24	.37	.00	.39

Note. Ethnic group: 0 = Euro Americans, 1 = Asian Americans. $n = 104$ for Cortisol reactivity; $n = 133$ for Negative mood reactivity; $n = 124$ for Coded speech performance.
[a] $p \leq .10$.
* $p \leq .05$.

below (β = –.23, $p = .107$) and at the mean (β = .00, $p = .991$; see Figure 5).

Discussion

This study examined how two psychosocial constructs traditionally conceptualized in Western cultures as being adaptive for psychological well-being—perceived social support and emotional expressivity—are differentially associated with stress responding in the lab for Asian Americans versus Euro Americans. Our findings showed some evidence that the protective effects of perceived support (or perceived family support) and emotional expressivity on stress reactivity were moderated by ethnic group, with results suggesting some stress buffering effects for the Euro American, but not Asian American, sample. In particular, with higher levels of perceived support, Euro Americans showed significantly lower psychological reactivity (i.e., negative mood) as well as marginal boosts to their objectively coded speech performance. Higher levels of self-reported emotional expressivity were also significantly linked with lower cortisol reactivity for Euro Americans, but not the other stress outcomes. Asian Americans, on the other hand, did not experience these same benefits; rather, a pattern of null associations for Asian Americans demonstrate no buffering effect of perceived support and self-reported emotional

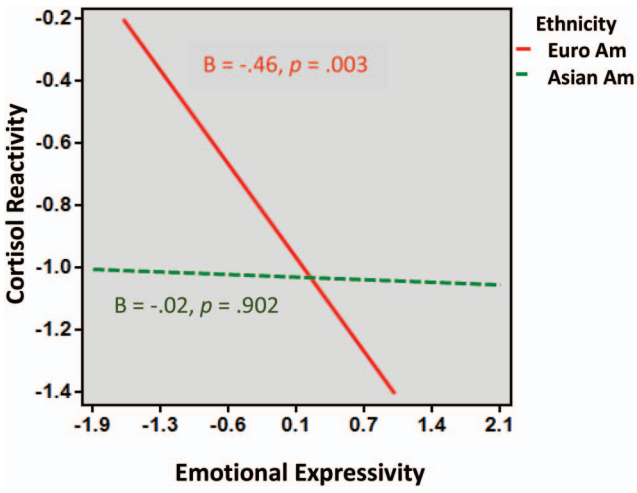

Figure 4. Ethnic group as a moderator of the association between emotional expressivity and cortisol reactivity. See the online article for the color version of this figure.

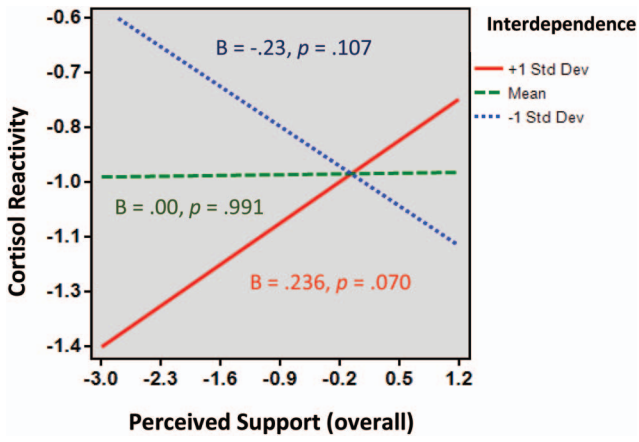

Figure 5. Interdependence as a moderator of the association between perceived support and cortisol reactivity. See the online article for the color version of this figure.

expressivity for stress responding across all three stress outcome variables.

Cultural fit theory (e.g., Soto, Chentsova-Dutton, & Lee, 2013) suggests that a better fit or match between an individual's own personal attitudes and behaviors with those of their cultural context predicts better health and well-being. Although not a direct measure of health and well-being, acute stress reactivity is a health-relevant process for which cultural fit may apply. Our findings suggest that, indeed, perceived support and emotional expressivity were not shown to be advantageous during a lab stressor for Asian Americans, despite some specific benefits for Euro Americans (e.g., cortisol reactivity and emotion expression; negative mood and perceived family support). These findings suggest ethnic differences in the utility of those qualities—some more benefits for White majority individuals embedded in Western settings that prioritize assertion and expression, and no benefits for ethnic minority individuals with exposure to collectivistic values emphasizing interdependence. Our findings echo those of Chiang, Saphire-Bernstein, Kim, Sherman, and Taylor (2013), who found that supportive relationships were related to lower levels of proinflammatory cytokine IL-6 among Euro Americans but not Asian Americans, as well as W. Tsai, Chiang, and Lau (2016), showing ethnic group differences in self-reflection processes that facilitate cortisol recovery from a lab stressor. Thus, our findings contribute to a small but growing body of evidence noting ethnic differences in how socioemotional processes "get under the skin."

However, we note that we found little support for our exploratory research question about whether culture would also act as a moderator in the associations between perceived support or emotional expressivity with stress responding in the same manner that ethnic group did. Not only did we find limited evidence of ethnic group differences on key cultural dimensions (self-construal, harmony values, acculturation)—there was only one instance in which culture moderated those same associations. Specifically, only interdependence moderated the association between perceived overall support and cortisol reactivity, with highly interdependent individuals being more biologically stressed by greater perceived support compared with low interdependence individuals. Thus, there was negligible evidence that culture—at least, culture as operationalized in this study—moderated these associations in place of ethnic group. We must note that the internal consistency for our measure of interdependence was somewhat low. Given that this was a secondary data analysis, we used the cultural variables that were available. It may be that other more targeted cultural values (e.g., concerns about relational burden) would have yielded different results, both in terms of clear ethnic group differences as well as moderation on stress outcomes. Additionally, this exploratory analysis raises the thorny issue of using ethnicity as a proxy for culture. Ethnicity and culture can best be viewed as distinct but overlapping constructs, and the use of ethnicity as a proxy for culture has been criticized regarding construct validity and assumptions of homogeneity within groups (e.g., DiPietro & Bursik, 2012). Indeed, there may be issues having to do with minority experiences or minority status—not captured by our cultural variables—that would affect these processes.

The emotion literature documents cultural differences in the valuation of strong and direct expression in individualism versus collectivistic social and emotional restraint (e.g., J. L. Tsai, 2007). Given interdependence concerns and a prevention orientation in avoiding conflict and maintaining relational harmony in East Asian cultures, a focus on emotion expressivity as the chief emotion process implicated in social functioning seems misguided. Indeed, research has in turn focused on emotion differentiation (Kang et al., 2003) and the ability to "read the air" as being more culturally congruent with East Asian cultural values with effects for relationships and well-being (Lau, Wang, Fung, & Namikoshi, 2014). Future research may investigate whether emotion differentiation or emotion recognition ability, as opposed to emotion expressivity, may be a more protective psychosocial resource for Asian Americans' cortisol reactivity.

Strengths of the current study include the fact that it illuminates ethnic diversity in what is widely presumed in general psychology to be the advantageous effects of perceived support and emotional expressivity for stress responding. Furthermore, we measured stress responding using multimethod approaches—biological, psychological, and behavioral—that provided a comprehensive multiangle view of stress processes. However, there are limitations that warrant mention. First, our findings are based off of cross-sectional correlational data that suggest that perceived support and emotional expressivity have differential effects on acute stress reactivity in the lab. Although we may believe this is the most reasonable interpretation of the data, we note that experimental designs are needed to support those conclusions. Second, the unpacking of ethnicity and culture was limited in the study. Although the ethnic moderation findings were interesting, further exploring what aspects of ethnicity (or of culture) contributes to these different processes would be an important next step. Third, we note that the stressor task used in the current study elicits social-evaluative stress, which may be especially salient for groups that prioritize social connection. Although robust evidence suggests that the TSST is the most reliable lab stressor for generating a stress response (e.g., Dickerson & Kemeny, 2004), it may be that the kinds of group differences we found would be diminished or different if another kind of stressor were used (e.g., a cognitive task that does not entail social-evaluative threat). Last, although there was partial evidence supporting our hypotheses, the findings fall short of demonstrating clear consistent patterns for each ethnic group across all stress outcomes, and thus further work is needed to replicate these findings and further explore and explicate any patterns.

Nevertheless, we believe that this analysis contributes toward a greater understanding of how the nature of psychosocial resources is ultimately circumscribed to certain ethnic groups. This adds to a broader conversation in ethnic minority clinical health psychology about what qualifies as adaptive coping, and highlights the need to investigate the sources of strength that apply in specific ways for different groups rather than making false assumptions about universal processes. Keener insights into these processes will enable services and programs to be modified and developed to better support groups that fall outside the mainstream majority. Finally, studies such as this one at the intersection of biological and sociocultural processes also further scientific knowledge on the intertwining of context and biology, specifically as it pertains to understanding stress and coping, and, farther downstream, illness and well-being. We encourage future research to adopt multimethod approaches in investigations of stress, coping, and health, with an eye toward unpacking ethnic differences in these complex and multilayered processes.

References

Adams, G., & Markus, H. R. (2004). Toward a conception of culture suitable for a social psychology of culture. In M. Schaller & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 335–360). Mahwah, NJ: Erlbaum.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.

Bolger, N., Zuckerman, A., & Kessler, R. C. (2000). Invisible support and adjustment to stress. *Journal of Personality and Social Psychology, 79,* 953–961. http://dx.doi.org/10.1037/0022-3514.79.6.953

Burgin, C. J., Brown, L. H., Royal, A., Silvia, P. J., Barrantes-Vidal, N., & Kwapil, T. R. (2012). Being with others and feeling happy: Emotional expressivity in everyday life. *Personality and Individual Differences, 53,* 185–190. http://dx.doi.org/10.1016/j.paid.2012.03.006

Burton, C. L., Bonanno, G. A., & Hatzenbuehler, M. L. (2014). Familial social support predicts a reduced cortisol response to stress in sexual minority young adults. *Psychoneuroendocrinology, 47,* 241–245. http://dx.doi.org/10.1016/j.psyneuen.2014.05.013

Butler, E. A., Lee, T. L., & Gross, J. J. (2007). Emotion regulation and culture: Are the social consequences of emotion suppression culture-specific? *Emotion, 7,* 30–48. http://dx.doi.org/10.1037/1528-3542.7.1.30

Campos, B., & Kim, H. S. (2017). Incorporating the cultural diversity of family and close relationships into the study of health. *American Psychologist, 72,* 543–554. http://dx.doi.org/10.1037/amp0000122

Campos, B., Yim, I. S., & Busse, D. (2018). *Culture as a pathway to maximizing the stress-buffering role of social support*. Manuscript submitted for publication.

Chiang, J. J., Saphire-Bernstein, S., Kim, H. S., Sherman, D. K., & Taylor, S. E. (2013). Cultural differences in the link between supportive relationships and proinflammatory cytokines. *Social Psychological and Personality Science, 4,* 511–520. http://dx.doi.org/10.1177/1948550612467831

Cohen, S. (2004). Social relationships and health. *American Psychologist, 59,* 676–684. http://dx.doi.org/10.1037/0003-066X.59.8.676

Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin, 130,* 355–391. http://dx.doi.org/10.1037/0033-2909.130.3.355

DiPietro, S. M., & Bursik, R. J., Jr. (2012). Studies of the new immigration: The new dangers of pan-ethnic classifications. *Annals of the American Academy of Political and Social Science, 641,* 247–267. http://dx.doi.org/10.1177/0002716211431687

Eisenberger, N. I., Taylor, S. E., Gable, S. L., Hilmert, C. J., & Lieberman, M. D. (2007). Neural pathways link social support to attenuated neuroendocrine stress responses. *NeuroImage, 35,* 1601–1612. http://dx.doi.org/10.1016/j.neuroimage.2007.01.038

Fleming, R., Baum, A., Gisriel, M. M., & Gatchel, R. J. (1982). Mediating influences of social support on stress at Three Mile Island. *Journal of Human Stress, 8,* 14–23. http://dx.doi.org/10.1080/0097840X.1982.9936110

Gleason, M. E. J., Iida, M., Shrout, P. E., & Bolger, N. (2008). Receiving support as a mixed blessing: Evidence for dual effects of support on psychological outcomes. *Journal of Personality and Social Psychology, 94,* 824–838. http://dx.doi.org/10.1037/0022-3514.94.5.824

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85,* 348–362. http://dx.doi.org/10.1037/0022-3514.85.2.348

Hofstede, G. (1980). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.

Kang, S.-M., Shaver, P. R., Sue, S., Min, K.-H., & Jing, H. (2003). Culture-specific patterns in the prediction of life satisfaction: Roles of emotion, relationship quality, and self-esteem. *Personality and Social Psychology Bulletin, 29,* 1596–1608. http://dx.doi.org/10.1177/0146167203255986

Keltner, D., & Kring, A. (1998). Emotion, social function, and psychopathology. *Review of General Psychology, 2,* 320–342. http://dx.doi.org/10.1037/1089-2680.2.3.320

Kim, H. S., & Sherman, D. K. (2007). "Express yourself": Culture and the effect of self-expression on choice. *Journal of Personality and Social Psychology, 92,* 1–11. http://dx.doi.org/10.1037/0022-3514.92.1.1

Kim, H. S., Sherman, D. K., Ko, D., & Taylor, S. E. (2006). Pursuit of comfort and pursuit of harmony: Culture, relationships, and social support seeking. *Personality and Social Psychology Bulletin, 32,* 1595–1607. http://dx.doi.org/10.1177/0146167206291991

Kim, H. S., Sherman, D. K., & Taylor, S. E. (2008). Culture and social support. *American Psychologist, 63,* 518–526. http://dx.doi.org/10.1037/0003-066X

King, L. A., & Emmons, R. A. (1990). Conflict over emotional expression: Psychological and physical correlates. *Journal of Personality and Social Psychology, 58,* 864–877. http://dx.doi.org/10.1037/0022-3514.58.5.864

Kirschbaum, C., Pirke, K. M., & Hellhammer, D. H. (1993). The "Trier Social Stress Test"—a tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology, 28,* 76–81. http://dx.doi.org/10.1159/000119004

Kring, A. M., Smith, D. A., & Neale, J. M. (1994). Individual differences in dispositional expressiveness: Development and validation of the Emotional Expressivity Scale. *Journal of Personality and Social Psychology, 66,* 934–949. http://dx.doi.org/10.1037/0022-3514.66.5.934

Kudielka, B. M., Schommer, N. C., Hellhammer, D. H., & Kirschbaum, C. (2004). Acute HPA axis responses, heart rate, and mood changes to psychosocial stress (TSST) in humans at different times of day. *Psychoneuroendocrinology, 29,* 983–992. http://dx.doi.org/10.1016/j.psyneuen.2003.08.009

Lau, A. S., Wang, S., Fung, J. J., & Namikoshi, M. (2014). What happens when you *can't read the air*? Cultural fit and aptitude by values interactions on social anxiety. *Journal of Social and Clinical Psychology, 33,* 853–866. http://dx.doi.org/10.1521/jscp.2014.33.10.853

Levy, S. R., Plaks, J. E., Hong, Y.-Y., Chiu, C.-Y., & Dweck, C. S. (2001). Static versus dynamic theories and the perceptions of groups: Different routes to different destinations. *Personality and Social Psychology Review, 5,* 156–168. http://dx.doi.org/10.1207/S15327957PSPR0502_6

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98,* 224–253. http://dx.doi.org/10.1037/0033-295X.98.2.224

Matsumoto, D., Yoo, S. H., & Fontaine, J. (2008). Mapping expressive differences around the world: The relationship between emotional display rules and individualism versus collectivism. *Journal of Cross-Cultural Psychology, 39,* 55–74. http://dx.doi.org/10.1177/0022022107311854

Mauss, I. B., Butler, E. A., Roberts, N. A., & Chu, A. (2010). Emotion control values and responding to an anger provocation in Asian-American and European-American individuals. *Cognition and Emotion, 24,* 1026–1043. http://dx.doi.org/10.1080/02699930903122273

Mortenson, S. (2006). Cultural differences and similarities in seeking social support as a response to academic failure: A comparison of American and Chinese college students. *Communication Education, 55,* 127–146. http://dx.doi.org/10.1080/03634520600565811

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128,* 3–72. http://dx.doi.org/10.1037/0033-2909.128.1.3

Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Per-*

sonality and Social Psychology, 79, 49–65. http://dx.doi.org/10.1037/0022-3514.79.1.49

Seeman, T. E. (1996). Social ties and health: The benefits of social integration. *Annals of Epidemiology, 6,* 442–451. http://dx.doi.org/10.1016/S1047-2797(96)00095-6

Shweder, R. A., & Bourne, E. J. (1984). Does the concept of the person vary cross culturally? In R. A. Shweder & R. A. LeVine (Eds.), *Culture theory: Essays on mind, self, and emotion* (pp. 158–199). Cambridge, UK: Cambridge University Press.

Singelis, T. M. (1994). The Measurement of independent and interdependent Self-Construals. *Personality and Social Psychology Bulletin, 20,* 580–591. http://dx.doi.org/10.1177/0146167294205014

Singelis, T. M., Triandis, H. C., Bhawuk, D. P. S., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-Cultural Research, 29,* 240–275.

Soto, J. A., Chentsova-Dutton, Y., & Lee, E. A. (2013). The role of cultural fit in the connection between health and social relationships. In M. L. Newman & N. A. Roberts (Eds.), *Health and social relationships: The good, the bad, and the complicated* (pp. 189–212). Washington, DC: American Psychological Association Press. http://dx.doi.org/10.1037/14036-009

Soto, J. A., Lee, E. A., & Roberts, N. A. (2016). Convergence in feeling, divergence in physiology: How culture influences the consequences of disgust suppression and amplification among European Americans and Asian Americans. *Psychophysiology, 53,* 41–51. http://dx.doi.org/10.1111/psyp.12579

Soto, J. A., Levenson, R. W., & Ebling, R. (2005). Cultures of moderation and expression: Emotional experience, behavior, and physiology in Chinese Americans and Mexican Americans. *Emotion, 5,* 154–165. http://dx.doi.org/10.1037/1528-3542.5.2.154

Taylor, S. E., Sherman, D. K., Kim, H. S., Jarcho, J., Takagi, K., & Dunagan, M. S. (2004). Culture and social support: Who seeks it and why? *Journal of Personality and Social Psychology, 87,* 354–362. http://dx.doi.org/10.1037/0022-3514.87.3.354

Taylor, S. E., Welch, W. T., Kim, H. S., & Sherman, D. K. (2007). Cultural differences in the impact of social support on psychological and biological stress responses. *Psychological Science, 18,* 831–837. http://dx.doi.org/10.1111/j.1467-9280.2007.01987.x

Tonsing, K., Zimet, G. D., & Tse, S. (2012). Assessing social support among South Asians: The multidimensional scale of perceived social support. *Asian Journal of Psychiatry, 5,* 164–168. http://dx.doi.org/10.1016/j.ajp.2012.02.012

Triandis, H. C. (1994). *Culture and social behavior*. New York, NY: McGraw-Hill.

Tsai, J. L. (2007). Ideal affect: Cultural causes and behavioral consequences. *Perspectives on Psychological Science, 2,* 242–259. http://dx.doi.org/10.1111/j.1745-6916.2007.00043.x

Tsai, W., Chiang, J. J., & Lau, A. S. (2016). The effects of self-enhancement and self-improvement on recovery from stress differ across cultural groups. *Social Psychological and Personality Science, 7,* 21–28. http://dx.doi.org/10.1177/1948550615598380

Tsai, W., Nguyen, D. J., Weiss, B., Ngo, V., & Lau, A. S. (2017). Cultural differences in the reciprocal relations between emotion suppression coping, depressive symptoms and interpersonal functioning among adolescents. *Journal of Abnormal Child Psychology, 45,* 657–669. http://dx.doi.org/10.1007/s10802-016-0192-2

Tsai, W., Sun, M., Wang, S. W., & Lau, A. S. (2016). Implications of emotion expressivity for daily and trait interpersonal and intrapersonal functioning across ethnic groups. *Asian American Journal of Psychology, 7,* 52–63. http://dx.doi.org/10.1037/aap0000043

Uchino, B. N. (2009). Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. *Perspectives on Psychological Science, 4,* 236–255. http://dx.doi.org/10.1111/j.1745-6924.2009.01122.x

Wang, S., & Campos, B. (2017). Cultural experiences, social ties, and stress: Focusing on the HPA axis. In J. M. Causadias, E. H. Telzer, & N. A. Gonzales (Eds.), *Handbook of culture and biology* (pp. 317–343). New York, NY: Wiley. http://dx.doi.org/10.1002/9781119181361.ch13

Wang, S., & Lau, A. S. (2015). Mutual and non-mutual social support: Cultural differences in the psychological, behavioral, and biological effects of support-seeking. *Journal of Cross-Cultural Psychology, 46,* 916–929. http://dx.doi.org/10.1177/0022022115592967

Wang, S. W., Shih, J. H., Hu, A. W., Louie, J. Y., & Lau, A. S. (2010). Cultural differences in daily support experiences. *Cultural Diversity and Ethnic Minority Psychology, 16,* 413–420. http://dx.doi.org/10.1037/a0019885

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070. http://dx.doi.org/10.1037/0022-3514.54.6.1063

Wei, M., Yeh, C. J., Chao, R. C.-L., Carrera, S., & Su, J. C. (2013). Family support, self-esteem, and perceived racial discrimination among Asian American male college students. *Journal of Counseling Psychology, 60,* 453–461. http://dx.doi.org/10.1037/a0032344

Wills, T. A. (1991). Social support and interpersonal relationships. In M. S. Clark (Ed.), *Prosocial behavior* (pp. 265–289). Newbury Park, CA: Sage.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment, 52,* 30–41. http://dx.doi.org/10.1207/s15327752jpa5201_2