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# Culture and the Health Benefits of Expressive Writing

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## Abstract

Expressive writing, in which individuals put their thoughts and feelings about traumatic events into words, can benefit physical health by fostering insight into the personal meaning of stressful experiences. The authors predicted that expressive writing would neither increase insight nor reduce symptoms of illness among Asian Americans, whose culture deemphasizes the act of verbalization in meaning making. In the present study, European and Asian American participants were randomly assigned to write about either their worst traumas or trivial topics on each of 4 consecutive days. Illness symptoms were assessed immediately before and 1 month after the writing sessions. European Americans who wrote about trauma increased their use of insight words over the four sessions and reported fewer illness symptoms a month later. However, neither effect obtained for Asian Americans. The cultural difference in health outcomes was mediated by European Americans' greater tendency to glean insight from the task.

## Keywords

culture, ethnicity, health, stress and coping, identity, culture and cognition

Psychological stress—from acute trauma to the chronic strains of everyday life—can adversely affect physical health (Miller, Chen, & Cole, 2009). In recent years, health psychologists have identified psychosomatic pathways through which stress affects the body, including the autonomic nervous system and hypothalamic-pituitary-adrenal axis (for a review, see Miller et al., 2009). Fortunately, researchers have also identified methods of attenuating the negative effects of stress and trauma. In *expressive writing*—one of the most widely studied interventions—participants are instructed to put their thoughts and feelings about a trauma or stressor into words. This simple act of verbalization is thought to help individuals build meaning and understanding around traumatic events, thus rendering those experiences less potent, aversive, and harmful to health (Pennebaker & Chung, 2007). Meta-analytic evidence now confirms the efficacy of expressive writing in reducing the negative physical effects of stress (Frattaroli, 2006; Frisina, Borod, & Lepore, 2004; Smyth, 1998).

Several factors are known to enhance or attenuate the health benefits of expressive writing (e.g., the amount of disclosure required of participants, the presence or absence of preexisting health problems; Frattaroli, 2006). However, the role of one potentially important factor—culture—is not well understood.<sup>1</sup> The present experiment was designed to address this gap in knowledge. Given that culture shapes a wide range of basic psychological processes (for reviews, see Fiske, Kitayama, Markus, & Nisbett, 1998; Markus & Kitayama, 1991; Nisbett, 2003; Peng, Ames, & Knowles, 2001), we surmised that

expressive writing might not prove universally beneficial. More specifically, compared to Western cultures, Asian cultures deemphasize verbalization as a means of meaning making, communication, and support seeking (Gudykunst, Ting-Toomey, & Chua, 1988; Kim, 2002; Kim, Sherman, & Taylor, 2008; Taylor et al., 2004). Thus, there is good reason to believe that expressive writing will prove more beneficial to European Americans than to Asian Americans.

## Culture, Verbalization, and Expressive Writing

The mechanisms behind expressive writing's benefits are not fully understood; however, several theorists have coalesced around the idea that disclosure improves health by helping individuals to find meaning in stressful and traumatic experience (Klein & Boals, 2010; Park & Blumberg, 2002; Pennebaker & Chung, 2007; Pennebaker & Keough, 1999; Rivkin, Gustafson, Weingarten, & Chin, 2006; Warner et al., 2006). On this view, negative feelings associated with a stressor tend to persist in consciousness—adversely affecting health—until

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the individual assimilates them into his or her worldview and life narrative. Cognitive understanding of this sort, however, requires that undifferentiated, “analog” experience be converted into a conceptual, or “digital,” format, such that it can be rendered coherent with preexisting understandings of the self and the world (Pennebaker & Chung, 2007, pp. 273-275). In expressive writing, this conversion is accomplished when the individual casts stressful experience in linguistic form.

This account of the expressive writing process hinges on the notion that people gain meaning and insight by putting their experiences into words. Not all cultures, however, view words as catalyzing thought in this fashion. Indeed, although verbalization is considered essential to thought in Western cultures, it is often regarded as *interfering* with thought in Asian contexts (Kim, 2002). These cultural orientations promote different cognitive responses to speech. In an illustrative study, Kim (2002) had European and Asian American participants solve logic puzzles while either verbalizing their thought processes or working in silence. Although verbalization enhanced European Americans’ performance at the task, it impaired Asian Americans’ performance. Despite differences between solving logic puzzles and processing traumatic experience, Kim’s (2002) findings provide reason to doubt that expressive writing will help Asians find meaning in their stressors. Processing trauma and solving puzzles alike require the individual to find structure and coherence in an initially intractable, “analog” experience.

Cultural-psychological research on social interaction provides further reason to believe that culture will moderate the effects of expressive writing. Strictly speaking, the typical expressive writing task is neither social nor communicative in nature, as participants know their responses will be kept anonymous and that no feedback will be provided (Pennebaker & Chung, 2007). Nonetheless, the task of verbally describing one’s traumatic experience closely resembles a communicative and interpersonal act; in fact, as Pennebaker and Chung (2007) suggest, participants might imagine a “symbolic” interlocutor as they describe their experience (p. 269). Thus, it is plausible that expressive writing will activate individuals’ beliefs and concerns regarding interpersonal interaction—a domain in which individuals from Western and Asian cultural contexts are known to differ. Across a wide variety of social situations, Asians prefer indirect and nonverbal modes of communication (Gudykunst et al., 1988) to explicit disclosure. In the specific context of social support seeking, Asians’ concern for interpersonal harmony often leads them to avoid sharing their stressors with others (Kim, Sherman, Ko, & Taylor, 2006; Taylor et al., 2004). These lines of evidence suggest that expressive writing requires a type of behavior that many Asian participants will find unfamiliar and discomfiting, which in turn may hamper their ability to glean insight and health benefits from the task.

## The Present Research

The present experiment tested whether the benefits of expressive writing extend to Asian Americans. Given cultural

differences in verbalization practices, we theorized that expressive writing would provide fewer health benefits to Asian Americans than to European Americans. European and Asian American participants underwent an expressive writing procedure in which they wrote about either trivial or traumatic events for 20 min on each of 4 consecutive days. Self-reported symptoms of physical illness were measured at pretest and during a follow-up assessment 1 month after completion of the writing tasks. We predicted that European Americans in the traumatic writing condition would exhibit an increase in meaning (i.e., insight; Pennebaker & Chung, 2007) across the four writing sessions but that no such effect would be found for Asian Americans. Second, we predicted that, relative to writing about trivial events, trauma writing would lead to a reduction in physical symptoms among the European Americans but not the Asian Americans. Finally, consistent with a meaning-making account of expressive writing (Pennebaker & Chung, 2007), we predicted that the cultural difference in health outcomes would be mediated by European Americans’ greater tendency to glean insight from the task.

## Method

### Participants

In exchange for course credit, 68 undergraduate students (60 females) at a public West Coast university took part in the study. In all, 39 participants were European American and 29 were Asian American (24 East Asian, 4 Filipino, and 1 South Asian). Participants ranged in age from 18 to 45 ( $M = 20.85$ ,  $SD = 3.94$ ). The European and Asian American groups did not differ significantly in terms of age, ( $M_{EA} = 21.47$ ,  $SD = 5.24$ ;  $M_{AA} = 19.73$ ,  $SD = 1.55$ ),  $t(52) = 1.51$ ,  $p = .14$ , or gender makeup (91% Asian American females, 91% European American females),  $\chi^2(1) = 0.001$ ,  $p = .97$ .

### Materials

**Language proficiency and preference questions.** To ensure that our Asian American participants were proficient in English and did not prefer speaking, reading, or writing in another language, we administered four language-related questions adapted from the Suinn-Lew Asian Self-Identity Acculturation Scale (Suinn, Rickard-Figueroa, Lew, & Vigil, 1987): “What language(s) can you speak?” “What language(s) can you read?” “What language(s) can you write?” and “What language(s) do you usually prefer to use?” The response options were the same for all items: “An Asian language only (for example, Chinese, Japanese, Korean, Vietnamese, etc.),” “Mostly Asian, some English,” “Asian and English about equally well,” “Mostly English, some Asian,” and “Only English.”

**Symptoms of illness.** Before and after the writing exercises, participants’ physical health was assessed using the Southern Methodist University Health Questionnaire (SMUHQ; Watson & Pennebaker, 1989). Participants indicated which of the SMUHQ’s 62 symptoms (e.g., sore throat, abdominal pain) they had experienced in the previous month.

**Privacy probe.** In her meta-analysis of expressive writing experiments, Frattaroli (2006) found that the level of privacy afforded participants during their writing sessions significantly moderated the efficacy of the intervention, with less privacy associated with smaller improvements (p. 846). We therefore sought to ensure that our participants had privacy when completing their writings. After each writing session, participants answered the following yes–no question: “Did you feel you had privacy during the writing exercise?”

### Procedure

All participants attended an in-person introductory meeting with an experimenter, who described the requirements of the study and indicated that participants’ writings and responses would be kept anonymous. Following this meeting, participants were emailed a link to a preliminary questionnaire containing demographic questions and the SMUHQ (pretest). Participants were told that, although they were not restricted as to where to complete their writings, they should choose a time and setting that would afford them privacy.

Immediately after the introductory meeting, participants were randomly assigned to the trivial and traumatic writing conditions. The next day, and each morning for the following 3 days, participants were emailed a link to a website where they completed a 20-min writing exercise consistent with their condition. The prompts for these exercises were closely adapted from Pennebaker and Chung (2007). In the trivial writing condition, participants wrote about topics “such as the weather, [their] routine, and minor happenings” while avoiding “emotional commentary.” In the traumatic writing condition, participants were instructed to write about their “very deepest thoughts and feelings about the most traumatic experience” of their lives.

One month after completing their last writing exercise, participants were sent a link via email to a follow-up questionnaire in which they again completed the SMUHQ (posttest).

## Results

### Data Cleaning

A total of 11 participants (6 European Americans and 5 Asian Americans) reported a lack of privacy during one or more of their writing sessions and were excluded from analysis on this basis. Because her pretest symptom count was an outlier, 1 Asian American was excluded (3.71 *SDs* above the mean), as were 2 participants (1 European American and 1 Asian American) with extreme posttest symptom counts (2.93 and 3.42 *SDs* above the mean, respectively). One Asian American participant reported greater speaking or reading ability in, and greater preference for, an Asian language compared to English. However, because this case had a negligible effect on the results, it was retained for the analyses below.

The final sample consisted of 54 participants (32 European Americans and 22 Asian Americans). Within each ethnicity, participants were close to evenly divided between the traumatic

**Table 1.** Traumas Reported in the Traumatic Writing Condition

Trauma	No. of participants
Suffered serious accident or injury	7
Serious illness of a loved one	7
Experienced parents’ divorce	5
Death of grandparent	5
Suffered serious illness	4
Serious accident or injury to loved one	3
Death of father	3
Death of brother or sister	2
Death of friend	2
Been shamed, embarrassed, or told you’re “no good”	2
Death of mother	1
Lost close other because of suicide	1
Experienced person-caused community disaster	1
Been hit or pushed by partner or spouse	1
Got divorced	1
Had unwanted pregnancy	1
Other	6

Note: Totals add to more than the number of participants in the traumatic writing condition ( $N = 26$ ) because some participants mentioned multiple topics over the four writing sessions.

and trivial writing conditions. Among European Americans, 15 participants were assigned to the traumatic writing condition and 17 to the trivial condition; among Asian Americans, 11 participants were assigned to the traumatic writing condition and 11 to the trivial condition.

### Features of Events Described in the Traumatic Writing Condition

**Event types.** Participants’ writings in the traumatic writing condition were categorized using Wolfe, Kimerling, Brown, Chrestman, and Levin’s (1996) Life Stressors Checklist. As shown in Table 1, the majority of participants’ writings fell into one of the checklist’s categories and represented a range of traumatic experiences.

**Event severity.** We assessed whether the writing manipulation elicited events of comparable severity from European American and Asian American participants. Each of eight coders,<sup>2</sup> blind to the research design and hypotheses, rated the events described by participants in the traumatic writing condition on two dimensions of severity: “Objective severity” reflected the degree to which the event would be considered severe by most people, whereas “subjective severity” reflected the degree to which participants were upset by the event. Both severity dimensions were rated using Likert-type scales (1 = *not at all severe*, 5 = *very severe*), and coder ratings for each writing were averaged for analysis. High levels of interrater reliability were achieved for both objective severity ( $ICC_{\text{average}} = .95$ ) and subjective severity ( $ICC_{\text{average}} = .92$ ). The events described by European American participants tended to be more severe than those of Asian American participants, in terms of both objective severity ( $M_{EA} = 3.13$ ,  $SD = 0.76$ ;  $M_{AA} = 2.34$ ,  $SD = 0.80$ ),  $t(24) = 2.56$ ,  $p = .02$ , and subjective severity

**Table 2.** Content of Expressive Writings Among European and Asian American Participants

Writing condition	Positive emotion		Negative emotion		Insight	
	M	SD	M	SD	M	SD
<b>European Americans</b>						
Trivial	2.51 <sub>a</sub>	0.77	0.88 <sub>a</sub>	0.63	1.33 <sub>a</sub>	0.65
Traumatic	2.57 <sub>a</sub>	0.84	2.98 <sub>b</sub>	1.01	3.04 <sub>b</sub>	0.66
<b>Asian Americans</b>						
Trivial	2.54 <sub>a</sub>	0.70	0.69 <sub>a</sub>	0.23	1.45 <sub>a</sub>	0.52
Traumatic	2.61 <sub>a</sub>	0.66	2.78 <sub>b</sub>	0.84	3.49 <sub>b</sub>	0.87

Note: Values represent percentages of the total number of words in each writing. Means in the same column that do not share subscripts differ at  $p < .05$ .

( $M_{EA} = 3.26, SD = 0.65; M_{AA} = 2.54, SD = 0.70$ ),  $t(24) = 1.84, p = .01$ . Ancillary analyses were conducted to examine whether cultural differences in event severity contributed to the effects reported below (see Notes 4 and 5).

**Analyses of Word Use**

All writings were content analyzed using Pennebaker, Booth, and Francis’s (2007) Linguistic Inquiry and Word Count software. Passages were proofread for spelling errors prior to processing. We focused our analysis on three categories of particular interest to expressive writing researchers: *negative emotion* (e.g., “sad,” “hate,” “hurt,” “guilty”), *positive emotion* (e.g., “happy,” “joy,” “peaceful”), and *insight* (e.g., “realized,” “understanding,” “thought,” and “knew”; Pennebaker, 1993; Pennebaker & Chung, 2007). Table 2 shows rates of word use averaged across the four writing exercises. Consistent with prior research (e.g., Pennebaker, 1993), the traumatic writing condition elicited significantly more negative emotion and insight words than did the trivial writing condition. Moreover, the overall content of European and Asian Americans’ writings was similar in both experimental conditions.

*Insight.* We hypothesized that European Americans in the traumatic writing condition would exhibit a steady increase in meaning over the 4 days of participation (cf. Pennebaker & Chung, 2007) but that this pattern would be absent among Asian Americans. The *insight* category comprised our index of meaning (Pennebaker, 1993; Pennebaker & Chung, 2007). Because the data were nested, with each participant completing four writing exercises, effects were tested using multilevel modeling in HLM 6 (Raudenbush, Bryk, Cheong, & Congdon, 2004). Participants’ trend in insight word use across the 4 writing days, controlling for positive and negative emotion words, was represented by the following Level 1 (within-person) equation:

$$INSIGHT_{ii} = \pi_{0i} + \pi_{1i}(DAY)_{ii} + \pi_{2i}(POSEMO)_{ii} + \pi_{3i}(NEGEMO)_{ii} + e_{ii}$$

Four Level 2 (between-person) equations were constructed to represent the effects of culture, writing condition, and their

**Table 3.** Summary of Results of a Hierarchical Model Predicting Insight Word Use Across the 4 Days of the Study

Effect	B	SE B	df	t
Culture ( $\beta_{01}$ )	0.14	0.08	200	1.50
Condition ( $\beta_{02}$ )	0.92	0.08	200	11.14***
Day ( $\beta_{10}$ )	0.02	0.08	200	0.80
Culture $\times$ Condition ( $\beta_{03}$ )	0.05	0.08	200	0.61
Culture $\times$ Day ( $\beta_{11}$ )	-0.12	0.08	200	-1.63
Condition $\times$ Day ( $\beta_{12}$ )	0.15	0.08	200	1.99*
Culture $\times$ Condition $\times$ Day ( $\beta_{13}$ )	-0.26	0.08	200	-3.37***
Positive emotion ( $\beta_{20}$ )	-0.18	0.07	200	-2.41*
Culture $\times$ Pos. Emotion ( $\beta_{21}$ )	0.12	0.07	200	1.60
Condition $\times$ Pos. Emotion ( $\beta_{22}$ )	-0.10	0.07	200	-1.38
Culture $\times$ Condition $\times$ Pos. Emotion ( $\beta_{23}$ )	0.12	0.07	200	1.65
Negative emotion ( $\beta_{30}$ )	0.08	0.12	200	0.67
Culture $\times$ Neg. Emotion ( $\beta_{31}$ )	0.06	0.12	200	0.50
Condition $\times$ Neg. Emotion ( $\beta_{32}$ )	-0.18	0.12	200	-1.47
Culture $\times$ Condition $\times$ Neg. Emotion ( $\beta_{33}$ )	0.00	0.12	200	0.44

\*  $p < .05$ . \*\*\*  $p < .001$ .

interaction on each Level 1 effect. For this purpose, we contrast coded participant culture ( $-1 = European American, 1 = Asian American$ ) and writing condition ( $-1 = trivial, 1 = traumatic$ ), then multiplied them to form an interaction term:

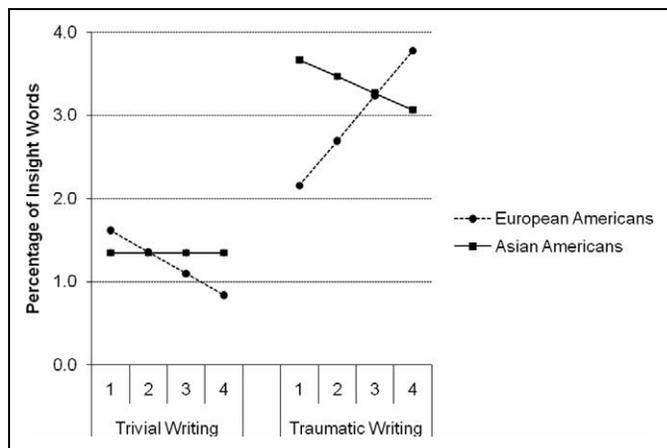
$$\pi_{0i} = \beta_{00} + \beta_{01}(CULTURE)_i + \beta_{02}(CONDITION)_i + \beta_{03}(CULTURE \times CONDITION)_i$$

$$\pi_{1i} = \beta_{11} + \beta_{12}(CULTURE)_i + \beta_{12}(CONDITION)_i + \beta_{13}(CULTURE \times CONDITION)_i$$

$$\pi_{2i} = \beta_{20} + \beta_{21}(CULTURE)_i + \beta_{22}(CONDITION)_i + \beta_{23}(CULTURE \times CONDITION)_i$$

$$\pi_{3i} = \beta_{30} + \beta_{31}(CULTURE)_i + \beta_{32}(CONDITION)_i + \beta_{33}(CULTURE \times CONDITION)_i$$

Full results of the analysis are displayed in Table 3. Of greatest interest, we observed a highly significant Culture  $\times$  Condition  $\times$  Day interaction,  $\beta_{13} = -.26, SE = 0.08, t(200) = -3.37, p < .001$ . As Figure 1 shows, European Americans in the traumatic writing condition increased their use of insight words across the 4 writing days; Asian Americans’ insight word use, in contrast, trended downward. Simple-slopes testing (Aiken & West, 1991) confirms that, in the traumatic writing condition, European Americans increased their use of insight words,  $\beta_{10} = .55, SE = 0.14, t(200) = 3.89, p < .0001$ , whereas Asian Americans did not,  $\beta_{10} = -.20, SE = 0.16, t(200) = -1.26, p = .21$ . Unexpectedly, European Americans in the trivial condition showed a marginally significant day-over-day decrease in their use of insight words,  $\beta_{10} = -.26, SE = 0.13, t(200) = -1.93, p = .06$ , a pattern not seen among Asian Americans,  $\beta_{10} = -.00, SE = 0.16, t(200) = 0.03, p = .98$ .<sup>3</sup>



**Figure 1.** Use of insight words as a function of culture and writing condition

*Emotional expression.* To examine the potential impact of culture on emotional expression, we reran the above analyses, this time with rates of negative and positive emotion word use as outcome variables (with the remaining word count variables as controls). Except for the effect of experimental condition on negative emotion words (apparent in Table 2), we observed no main effects of, or interactions between, culture, writing condition, or writing day on negative emotion words,  $ps > .19$ , or positive emotion words,  $ps > .38$ .

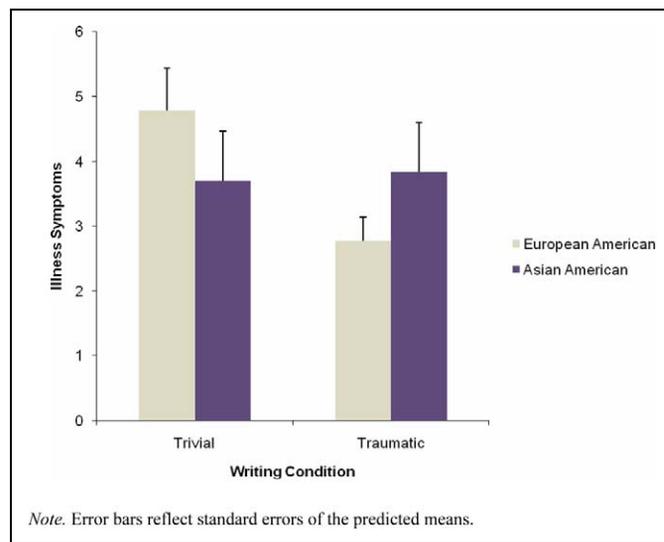
**Symptoms of Illness**

Descriptive statistics for the symptom count variable are displayed in Table 4; as can be seen, European Americans in the traumatic writing condition were the only group to show a marginally significant decrease in illness symptoms between the pre- and posttest assessments. Our primary prediction was that writing about traumatic events—as compared to trivial topics—would reduce symptoms of illness among European American participants but not among Asian American participants. Controlling for pretest symptoms, we regressed participants’ posttest symptom counts on the SMUHQ onto the variables representing culture ( $-1 = \text{European American}$ ,  $1 = \text{Asian American}$ ) and writing condition ( $-1 = \text{trivial topic}$ ,  $1 = \text{traumatic topic}$ ) as well as the product of these variables, the Culture  $\times$  Writing Condition interaction term. Because the dependent measure in this analysis was a count variable, negative binomial regression was used (Gardner, Mulvey, & Shaw, 1995). No main effect was found for culture,  $B = 0.01$ ,  $SE B = 0.07$ ,  $z = 0.17$ ,  $p = .82$ . The effect of writing condition was marginally significant,  $B = -0.12$ ,  $SE B = 0.07$ ,  $z = -1.72$ ,  $p = .08$ , reflecting the fact that follow-up symptoms were fewer in the traumatic condition overall. Finally, we observed a significant Culture  $\times$  Writing Condition interaction,  $B = 0.15$ ,  $SE B = 0.07$ ,  $z = 2.12$ ,  $p = .03$ .<sup>4</sup> As seen in Figure 2, trauma disclosure reduced illness symptoms among European Americans but not among Asian Americans. Analyses of simple effects showed that the decrease in symptoms for

**Table 4.** Pretest and Posttest Symptom Counts for European and Asian American Participants as a Function of Writing Condition

Writing condition	Pretest		Posttest	
	M	SD	M	SD
<b>European Americans</b>				
Trivial	5.76 <sub>a</sub>	3.53	5.82 <sub>a</sub>	2.21
Traumatic	4.47 <sub>a</sub>	3.34	2.87 <sub>b</sub>	2.17
<b>Asian Americans</b>				
Trivial	5.00 <sub>a</sub>	3.74	3.90 <sub>a</sub>	3.71
Traumatic	4.00 <sub>a</sub>	4.02	4.39 <sub>a</sub>	5.89

Note: Means in the same row that do not share subscripts differ at  $p < .10$ .



**Figure 2.** Physical symptom counts at posttest as a function of culture and writing condition

European Americans was significant,  $B = -0.27$ ,  $SE B = 0.09$ ,  $z = -2.94$ ,  $p = .003$ , whereas Asian Americans’ change in symptoms was not,  $B = 0.03$ ,  $SE B = 0.11$ ,  $z = 0.26$ ,  $p = .80$ .<sup>5</sup>

*Mediation by insight.* The analyses above revealed that European American participants tended to increase their use of insight words over the 4 writing days, whereas Asian American participants showed no change. At the same time, writing about traumas reduced symptoms of illness among European Americans, whereas Asian Americans showed no such benefit. On the present account, traumatic writing benefits European Americans more than Asian Americans because the former, but not the latter, gain insight as a result of a task involving verbalization. We next sought to test this mechanism.

*Derivation of insight slopes.* We began by estimating each participant’s trend in insight word use across the 4 days of the study. These estimates were obtained by conducting a separate linear regression analysis for each participant, using writing day to predict insight word use. The resulting standardized regression coefficients provided individualized estimates of participants’ insight slopes. Estimates of trends in negative and

positive emotion word use were then obtained using the same procedure.

**Mediation tests.** Having estimated participants' insight slopes, we tested whether these slopes mediated the interactive effect of the culture and writing condition on symptom counts while controlling for pretest symptoms. Bias-corrected bootstrapping (Shrout & Bolger, 2002) was used to test this indirect effect in Stata 10 (StataCorp, 2007).<sup>6</sup> To strengthen our conclusions regarding the unique role of insight, participants' positive and negative emotion word slopes were entered into the analysis as covariates. As predicted, insight slopes mediated a reliable and positive indirect effect of the Culture  $\times$  Condition interaction on symptom counts,  $B = 0.09$ ,  $SE B = 0.05$ , 95% CI [0.015, 0.247].

To better understand this pattern, we used simple-slope analyses (Aiken & West, 1991) to examine mediation within the traumatic and trivial writing conditions. Bootstrapping revealed that, in the traumatic writing condition, insight slopes mediated a positive indirect effect of culture ( $-1 = \textit{European American}$ ,  $1 = \textit{Asian American}$ ) on symptom counts,  $B = 0.13$ ,  $SE B = .08$ , 95% CI [0.012, 0.377]. As would be expected, however, significant mediation was not observed in the trivial writing condition,  $B = -0.06$ ,  $SE B = 0.05$ , 95% CI [-0.173, 0.017]. These findings suggest that the cultural difference in posttest symptoms stems (at least in part) from European Americans' tendency to glean more insight than Asian Americans from the expressive writing task.

**Mediation by emotional expression.** To examine whether emotional expression tendencies underlie the effect of culture on symptoms of illness, we reran the above mediation models, this time using negative and positive emotion word slopes as the mediators (with the remaining word count variables as covariates). The Culture  $\times$  Condition effect on illness symptoms was mediated by neither negative emotions,  $B = -0.03$ ,  $SE B = 0.04$ , 95% CI [-0.153, 0.024], nor positive emotions,  $B = 0.06$ ,  $SE B = 0.05$ , 95% CI [-0.018, 0.166].

## Discussion

The present findings suggest that expressive writing might not benefit health in cultures that deemphasize verbalization as a route to meaning making and discourage the explicit communication of personal problems. Unlike their European American counterparts, Asian Americans who wrote about traumatic events exhibited no increase in insight over the four writing sessions; nor did they show a reduction in illness symptoms a month later. These findings suggest that expressive writing after trauma may not benefit individuals whose culture runs counter to Western verbalization practices. The present study also provides evidence that culturally-divergent responses to verbalization constitute the mechanism responsible for intergroup differences in health outcomes. Specifically, we found that European Americans' greater tendency to use progressively more insight words mediated their lower symptom counts at posttest. In contrast, we uncovered no clear evidence

that cultural differences in emotional expression—positive or negative—mediated health outcomes.

The present findings lend credence to current theorizing concerning the causes of expressive writing's well-documented benefits (see Frattaroli, 2006) as well as cultural factors that might limit those benefits to certain populations. Consistent with Pennebaker and Chung's (2007) analog-to-digital ("A-to-D") model of expressive writing, European American participants showed a steady increase in insight across the four trauma-writing sessions and a concomitant reduction in health symptoms at follow-up. Consistent with cultural research into social interaction (Gudykunst et al., 1988; Kim, 2008) and the relationship between verbalization and thought (Kim, 2002), the A-to-D conversion of traumatic thoughts and feelings did not increase insight or benefit the health of Asian American participants. In sum, the present experiment provides a promising account for why expressive writing benefits some people (i.e., it fosters meaning and insight) but not others (i.e., it runs counter to cultural norms regarding verbalization). Future research might further test this account by directly measuring participants' values concerning verbalization—for instance, using Kim and Sherman's (2007) Value of Expression Questionnaire.

## Notes of Caution

Although certainly suggestive of cultural differences in the health benefits of expressive writing, the present results should be regarded as preliminary. The fact that symptoms of illness were measured using a self-report checklist (i.e., the SMUHQ; Watson & Pennebaker, 1989) limits our ability to draw definitive conclusions about participants' health. Indeed, culture is known to shape the manner in which bodily symptoms and illness are experienced, labeled, and reported to health practitioners (Angel & Thoits, 1987; Zola, 1966). Consequently, self-report measures—as well as more "objective" measures, such as the frequency of doctor visits—are not immune from unwanted cultural influence and must therefore be interpreted with caution. It should be noted, however, that a simple cultural bias in the tendency to notice or report symptoms could not explain the current pattern of findings, which involve the interaction of culture with our experimental manipulation of writing topic. Nevertheless, further research should examine biological indicators of illness processes—such as elevated levels of cortisol (Miller et al., 2009)—to more directly assess the health implications of expressive writing for Asian Americans.

## What Works for Asian Americans?

Although it may be the case that expressive writing provides relatively little health benefit to Asian Americans, it is important to note that these individuals may benefit from other ways of processing psychological stress. Theorizing by Kim (2002, 2008) and Pennebaker (2007; Pennebaker & Keough, 1999) combines to suggest a reason why expressive writing might fail to improve health among Asian Americans: Verbalization does

not afford these individuals with an effective means of processing and building meaning around traumatic experiences. Meaning might, however, be facilitated through less verbal means of coping, such as silent introspection, meditation, or art. Future research should address this possibility.

It may also be the case that relational concerns contributed to the observed cultural difference in the health benefits of expressive writing. A growing body of research suggests that sharing traumas with others is itself stressful for Asian Americans, who tend to place great value on the harmony and stability of their social networks (Kim et al., 2008; Taylor et al., 2004). Because it so closely resembles a communicative act, expressive writing—even if done anonymously and confidentially—may activate such concerns. Fortunately, Asian Americans appear to benefit from *implicit* forms of social support, such as interacting with close others or even just thinking about their social relationships (Kim et al., 2008; Taylor et al., 2004). Future research might examine whether expressive writing, not about traumatic experience per se but rather about valued social bonds, may reduce stress and yield health benefits among Asian Americans.

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### Notes

1. In her meta-analysis, Frattaroli (2006) found that 7% of participants in the studies she examined were Asian or Asian American. The size of the Asian sample did not significantly moderate the effect of expressive writing on self-reported symptoms of illness. However, larger Asian samples were associated with smaller symptom reductions,  $r(62) = -.14, p = .26$  (p. 846). Frattaroli notes that the samples in her meta-analysis varied little in their cultural makeup, thus affording a weak test of cultural effects (p. 856).
2. The coders came from a range of ethnic backgrounds (3 Asian Americans, 2 European Americans, 2 Latino/as, and 1 African American). Of the 8 coders, 5 were females.
3. As noted above, Asian Americans' trauma writings were judged by raters as less objectively and subjectively severe than those of European Americans. We sought to test whether this discrepancy might have been responsible for the observed cultural differences in insight word usage. We conducted a multilevel analysis within the traumatic writing condition, adding objective and subjective severity as Level 1 covariates and the means for objective and

subjective severity across writing days as Level 2 covariates. As before, European Americans increased significantly in insight over the four writing sessions,  $\beta_{10} = .62, SE = 0.20, t(85) = 3.05, p = .004$ , whereas Asian Americans trended downward,  $\beta_{10} = -.37, SE = 0.20, t(85) = -1.82, p = .07$ , suggesting that the observed cultural differences were not the result of differences in the severity of events described by European and Asian Americans.

4. When testing interactions among independent variables, controlling for a covariate often fails to yield bias-free estimates (Yzerbyt, Muller, & Judd, 2004). Thus, we replicated our symptom analysis using a more copious set of controls, including all interactions among pretest symptoms, culture, and writing condition. The analysis closely reproduced the effects reported above.
5. It could be that the observed cultural difference in symptom counts reflects differences in the severity of participants' traumas. Weighing against this possibility, however, is the fact that posttest symptoms were not significantly correlated with either objective severity,  $r(26) = .20, p = .34$ , or subjective severity,  $r(26) = .09, p = .68$ .
6. Unlike the negative binomial regressions used in the previous analyses of symptom counts, the Stata 10 (StataCorp, 2007) mediation procedure that we used (sgmediation) assumes a normally distributed outcome variable. Therefore, we normalized the pre- and posttest symptom count data using a square root transformation for the analysis. As intended, this transformation substantially reduced skewness and kurtosis in the symptom count distributions.

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