
Somatic and Social: Chinese Americans Talk About Emotion

Jeanne L. Tsai

Diana I. Simeonova

Stanford University

Jamie T. Watanabe

San Jose Medical Center

Empirical findings suggest that Chinese and Americans differ in the ways that they describe emotional experience, with Chinese using more somatic and social words than Americans. No one, however, has investigated whether this variation is related to differences between Chinese and American conceptions of emotion or to linguistic differences between the English and Chinese languages. Therefore, in two studies, the authors compared the word use of individuals who varied in their orientation to Chinese and American cultures (European Americans [EA], more acculturated Chinese Americans [CA], and less acculturated CA) when they were speaking English during emotional events. Across both studies, less acculturated CA used more somatic (e.g., dizzy) and more social (e.g., friend) words than EA. These findings suggest that even when controlling for language spoken, cultural conceptions of emotion may shape how people talk about emotion.

Keywords: culture; verbal expression; emotion; language; Chinese; LIWC

Decades of empirical research in medical anthropology and transcultural psychiatry have documented cultural variation in the verbal expression of emotion, in particular, of emotional distress (e.g., Cheung, 1982; Gaines, 1995; Obeyesekere, 1985). For instance, Kleinman and Kleinman (1985) observed that compared to American patients, Chinese patients are more likely to somatize episodes of depression (i.e., use bodily rather than psychological terms to describe symptoms that resemble depression). Surprisingly few studies, however, have actually examined what specific aspects of culture contribute to variation in talk about emotion. For example, this variation could be due to differences in cultural conceptions of emotion or to differences in

the languages used to communicate emotion. From a scientific perspective, examining the sources of variation in verbal emotional expression is central to understanding the complex relationship between thought and language, a relationship that has recently received renewed interest among linguists, psychologists, and anthropologists (e.g., Gentner & Goldin-Meadow, 2003). From an applied perspective, understanding the sources of variation in verbal emotional expression is critical for educators, clinicians, and employers working with culturally and linguistically diverse populations. Thus, we conducted two studies that began to address this issue by examining whether cultural differences in talk about emotion emerged when individuals who were oriented to different cultures spoke the same language.

Sources of Variation in Talk About Emotion: Cultural Conceptions or Language?

Culture consists of shared meaning systems and practices—values, beliefs, artifacts, language, rituals, cere-

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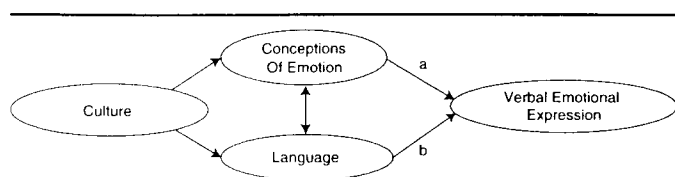


Figure 1 Conceptual (a) and linguistic (b) mediators of cultural variation in verbal emotional expression.

monies—that are both “products of action” and “conditioning elements of further action” (Kroeber & Kluckhohn, 1952, p. 181). Of these different aspects of culture, which are related to talk about emotion? Many theorists assume that different cultural conceptualizations of emotion (the conceptual hypothesis; see Link a in Figure 1) account for cultural variation in verbal emotional expression. For example, several scholars argue that relative to American culture, Chinese culture views psychological and physical states as more closely intertwined and, therefore, Chinese talk about emotion more somatically (Kleinman, 1986; Ots, 1990). However, other scholars argue that differences in descriptions of emotional experience stem from differences in the specific languages in which they are expressed (the linguistic hypothesis; see Link b in Figure 1; e.g., Whorf, 1956). Tung (1994) suggests that Chinese may appear to somatize their emotions more than Americans because emotional and somatic words are less differentiated in the Chinese language than they are in the English language. For example, the Chinese character for love 愛 contains the Chinese character for heart 心. This argument suggests that linguistic features may account for more variation in verbal expression than different cultural conceptions of emotion.

To date, few scholars have contrasted linguistic with conceptual accounts of variation in emotional expression. In part, this is because many scholars believe that cultural ideas and language are inseparable because language is the primary vehicle through which cultural ideas are transmitted (Slobin, 2003; Tomasello, 1999; Wierzbicka, 1993, 1995). Moreover, because most researchers compare one monolingual-monocultural group with another (e.g., Chinese-speaking individuals living in China with English-speaking individuals living in the United States), they conflate language use with cultural conceptions and, therefore, cannot assess the independent effects of language and of cultural conceptions on verbal emotional expression.

Dissociating Cultural Conceptions From Language Use

Recent demographic trends, however, allow new comparisons that may shed light on the relative influences of cultural conceptions and language on verbal emotional

expression; that is, the number of individuals who have been exposed to multiple cultures and languages is steadily increasing in the United States, currently comprising 17.9% of the U.S. population (U.S. Bureau of the Census, 2000). By comparing individuals from different cultural backgrounds while they speak the same language, scientists can begin to dissociate the effects of language from the effects of cultural conceptions on talk about emotion (i.e., in Figure 1, examining “a” by holding “b” constant). If the linguistic hypothesis is correct, cultural variation in emotion talk should not be apparent when individuals who vary in their cultural orientations speak the same language. However, if the conceptual hypothesis is correct, systematic differences in talk about emotion should persist even when individuals who vary in their cultural orientations speak the same language. Despite decades of research on bilingualism (e.g., Chen & Leung, 1989; Potter, So, Von Eckardt, & Feldman, 1984) and studies documenting the effects of speaking different languages on responses to cognitive tasks (e.g., Slobin, 2003) and personality tests (e.g., Ervin, 1964; Hull, 1996), to our knowledge, no studies have examined whether cultural differences in verbal emotional expression persist among individuals who vary in their cultural orientations when they use the same language.

Variation in Word Use

For several reasons, we focused on word use, or the frequency with which particular words were used, to test the conceptual and linguistic hypotheses. First, improved computerized text analysis programs that classify words used by a speaker into various categories provide an objective and systematic way of quantifying and comparing verbal expression across groups. Second, although no studies have used such programs to examine cultural variation in word use, several scientists have observed meaningful variation in English word use as a function of personality, gender, and education (e.g., Gleser, Gottschalk, & Watkins, 1959; Pennebaker & King, 1999; Schnurr, Rosenberg, & Oxman, 1992). Moreover, some investigators have reported that within individuals, changes in word use are related to health and well-being. For example, Pennebaker, Mayne, and Francis (1997) observed that during trauma recovery, individuals who wrote about their traumas using increasingly more positive emotion and more cognitive words were less likely to visit their physicians days later. Third, in previous studies, variation in word use between and within individuals has been attributed to variation in individuals’ mental states. For example, in the latter study, Pennebaker et al. (1997) argued that the increased use of positive emotion and cognitive words reflected individuals’ greater acceptance of their trauma.

mas. If changes in word use reflect changes in mental states, then systematic differences in word use could reflect differences in cultural conceptions of emotion. Because humans spend a large percentage of their time "preparing, producing, and interpreting verbal messages" (Slobin, 2003, p. 158), we focused on spontaneous word use during emotional events to maximize the ecological validity of our findings.

The Present Studies: Word Use in Chinese Americans and European Americans

Because the linguistic hypothesis predicts that differences in word use are due to specific features of the languages spoken, testing the linguistic hypothesis simply requires comparing the word use of individuals who vary in their cultural orientations yet speak the same language; that is, systematic differences in word use should disappear when individuals speak the same language. However, because the conceptual hypothesis predicts that differences in word use are due to cultural conceptions of emotion, testing the conceptual hypothesis requires choosing individuals who speak the same language and are oriented to cultures with conceptions of emotion that have clear implications for word use. Therefore, we compared the word use of European Americans (EA) and Chinese Americans (CA), individuals who reported high levels of fluency in English but who reported varying levels of orientation and exposure to Chinese and American cultures.¹ CA were divided into those who were more and those who were less acculturated because previous studies have demonstrated considerable within-group variation in emotional expression due to acculturation (e.g., Tsai, Chentsova-Dutton, Friere-Bebeau, & Przymus, 2002).

As described above, Chinese culture views emotions as more intertwined with somatic and bodily states than mainstream American culture (Kleinman, 1986; Ots, 1990). Thus, the conceptual hypothesis predicts that individuals who are more oriented to Chinese culture and less oriented to American culture ("less acculturated" CA) will use more somatic words during emotional events than those who are more oriented to American culture (EA) and less oriented to Chinese culture ("more acculturated" CA), even when they speak English. Scholars also have observed that in mainstream American contexts where the focal unit is the individual, emotions are experienced alone as well as with others; by contrast, in East Asian cultural contexts where the focal unit is the group, emotions are primarily experienced and expressed in relation to others (e.g., Kitayama, Markus, & Kurokawa, 2000; Mesquita & Karasawa, 2002). Thus, the conceptual hypothesis also predicts that less acculturated CA will use more social words, or words that refer to relationships (e.g., friend) and social interaction

(e.g., share), than EA or more acculturated CA during emotional events. Finally, Chinese culture is described as encouraging the control or moderation of emotional expression, particularly of emotions that may threaten relationships (Matsumoto, 1990; Russell & Yik, 1996). In contrast, mainstream American culture is described as encouraging the expression of emotion, especially emotions that assert the uniqueness of the individual, such as pride (Eid & Diener, 2001; Wierzbicka, 1994). Thus, the conceptual hypothesis predicts that less acculturated CA will use fewer emotion words than EA or more acculturated CA.

Consistent with the differences between Chinese and American conceptions of emotion described above, Wang (2001) found that Mandarin-speaking Chinese used more social and fewer emotion words than did English-speaking EA when they recalled autobiographical memories. To examine whether these differences in word use are due to cultural conceptions of emotion or to linguistic features of Mandarin and English, the present study examined whether similar differences in word use emerged among individuals who varied in their orientation to Chinese and American cultures while they spoke English.

STUDY 1: WORD USE DURING THE ADULT ATTACHMENT INTERVIEW

In Study 1, we tested the conceptual and linguistic hypotheses by examining word use during the adult attachment interview (AAI; George, Kaplan, & Main, 1985), a semi-structured interview that was explicitly designed to tap into participants' feelings about their parents and early childhoods. We used the AAI because it resembled those administered in clinical settings, making it an ecologically valid situation in which to examine cultural variation in talk about emotion.

Method

PARTICIPANTS

Thirty European Americans (EA) and 30 Chinese Americans (CA; 53.3% women) were recruited via flyers and announcements to participate in a study of family relationships. Participants were students from colleges and universities in Minnesota and received \$20 for their participation in the study. To increase the cultural homogeneity of the EA sample, EA participants were required to (a) be born in the United States, (b) have EA parents and grandparents who were born and raised in the United States, and (c) be fluent in English. To increase the cultural homogeneity of the CA sample, CA were required to (1) be born in either the United States, China, Taiwan, or Hong Kong; (2) have Chinese parents and grandparents who were born and raised in China,

TABLE 1: Sample Demographics

	M (SD)/Percentages		
	European Americans	More Acculturated Chinese Americans	Less Acculturated Chinese Americans
Study 1: Interview			
Age	20.83 (2.53)	21.13 (3.02)	23.33 (3.85)
% female	53.3	53.3	53.3
Place of birth			
United States	100%	66.7%	—
Overseas	—	33.3%	100%
SES of household ^a	3.37 (.67)	3.00 (.93)	2.67 (.90)
Proficiency in English ^b	4.73 (.45)	4.86 (.36)	4.00 (.85)
Proficiency in Chinese ^b	—	3.08 (.95)	4.73 (.46)
American orientation	3.95 (.56)	4.16 (.24)	3.25 (.39)
Chinese orientation	—	3.12 (.25)	3.77 (.33)
Study 2: Conversations			
Age	20.78 (1.77)	20.15 (1.40)	20.66 (1.29)
% female	50	50	50
Place of birth			
United States	100%	64.5%	8.3%
Overseas	—	35.5%	91.7%
SES of household ^a	3.51 (.86)	3.33 (.95)	3.15 (.83)
Proficiency in English ^b	4.99 (.08)	4.89 (.31)	4.57 (.54)
Proficiency in Chinese ^b	—	3.26 (.90)	4.06 (.90)
Years dating	1.84 (.90)	1.70 (.80)	1.76 (1.18)
Time spent together ^c	48.45 (31.92)	42.15 (26.73)	52.60 (27.37)
Level of commitment ^d	6.35 (.83)	6.33 (.78)	6.15 (.92)
American orientation			
Female	4.02 (.32)	3.89 (.29)	3.36 (.29)
Male	4.09 (.31)	3.74 (.20)	3.25 (.34)
Chinese orientation			
Female	—	2.63 (.22)	3.17 (.35)
Male	—	2.72 (.30)	3.26 (.42)

NOTE: SES = socioeconomic status.

a. 1 = *lower class* to 5 = *upper class*.

b. 1 = *not at all* to 5 = *extremely proficient*.

c. Numbers shown are in hours.

d. 1 = *not at all* to 7 = *extremely*.

Taiwan, or Hong Kong; (c) have been raised in households where a Chinese dialect (e.g., Mandarin, Taiwanese, or Cantonese) was spoken; (d) have at least 50% of their friends during childhood or adolescence be Chinese or CA; and (e) be fluent in English. Among the CA who were born outside of the United States (see Table 1), the average length of time spent in the United States was 5.62 years (5.58).

As mentioned above, the CA sample was divided into two groups based on their levels of orientation to American culture (see General Ethnicity Questionnaire, below). Participants whose American orientation scores were above the median (3.78) were classified as more acculturated ($n = 15$); those whose American orientation scores were below the median were classified as less acculturated ($n = 15$). Although the CA groups were identified by their differences in orientation to American culture, they also varied in their orientation to Chi-

nese culture (see Table 1).² Although all CA reported growing up in a household where a Chinese dialect was spoken, CA varied in their proficiency in Chinese and whether they regarded themselves as bilingual. Specifically, less acculturated CA reported being more proficient in Chinese than more acculturated CA on a 5-point scale (1 = *not at all* to 5 = *extremely proficient*), $F(1, 26) = 35.85$, $p < .001$ (see Table 1 for *Ms* and *SDs*). One hundred percent of less acculturated CA reported being bilingual, whereas 80% of more acculturated CA reported being bilingual.

One-way analyses of variance (ANOVAs) revealed group differences in the socioeconomic status of participants' home environment, $F(2, 57) = 4.00$, $p < .05$, and age, $F(2, 57) = 3.59$, $p < .05$. Less acculturated CA grew up in less affluent households and were older than EA ($p < .05$; see Table 1 for *Ms* and *SDs*). Analyses also revealed significant differences in reported proficiency in English, $F(2, 56) = 10.87$, $p < .001$. Although the means of all

three groups were 4 or above on a 5-point scale (1 = *not at all* to 5 = *extremely proficient*), indicating that participants were all highly proficient in English, less acculturated CA reported that they were less proficient in English than more acculturated CA and EA ($p < .05$). Unless noted, the results reported below did not change when socioeconomic status (SES) and proficiency in English were included as covariates. Similarly, differences between more and less acculturated CA remained the same when proficiency in Chinese was controlled for and when only individuals that reported being bilingual were included in the analyses. Therefore, none of these variables can account for the observed findings.

QUESTIONNAIRES

Cultural orientation. Participants completed the General Ethnicity Questionnaire (GEQ; Tsai, Ying, & Lee, 2000), a measure of orientation to and engagement in Chinese and American cultural contexts. CA completed the Chinese (GEQC) and American versions (GEQA); EA completed the GEQA only. Participants used a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) to rate 25 items pertaining to their social affiliation, activities, attitudes, exposure, and food and a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*) to rate 13 items pertaining to their language use. Cronbach's alphas for the GEQC and GEQA were .91 and .94 for CA, respectively. Cronbach's alpha for the GEQA was .94 for the EA sample.

Emotion inventory. To ensure that the interview elicited changes in reports of emotional experience compared to baseline, participants completed 16-item emotion inventories based on Ekman, Friesen, and Ancoli (1980). Inventories were completed at two time points: (a) immediately after a 3-minute baseline period and (b) at the end of the interview. For each of the emotion terms, participants rated how they felt at the moment using an anchored 9-point Likert-type scale (0 = *none*, 4 = *moderate*, and 8 = *the most I have felt in my life*). We sampled three octants of Watson and Tellegen's (1985) two-dimensional map of affective states: (a) pleasant (contentment, happiness, satisfaction, amusement), (b) high negative activation (anger, contempt, disgust, tension, fear, and anxiety), and (c) unpleasant (sadness).³ The remaining items were filler items. Alphas were .81 and .80 (baseline, interview) for the pleasant composite and .78 and .79 for the high negative activation composite.

PROCEDURE

Participants were asked to relax for 3 minutes (baseline period). Participants were then asked to describe their family situation and early relationships with their parents, salient separation episodes, instances of perceived childhood rejection, and encounters with loss

and to reflect on their childhood experiences (Hesse, 1999). Trained research assistants transcribed the interviews verbatim.

DATA REDUCTION

We used Pennebaker's Linguistic Inquiry and Word Count (LIWC; Pennebaker & Francis, 1999) to assess word use because LIWC's word categories have been psychometrically validated and because they map neatly onto Chinese and American conceptions of emotion. LIWC is a computerized text analysis program that has been widely employed to examine the frequency of words used in written and spoken language (Pennebaker & Francis, 1999; Pennebaker & King, 1999). LIWC contains a dictionary of more than 2,200 words or word stems that have been classified reliably by independent raters into 72 categories (e.g., positive emotion). For a given sample of text, LIWC counts the number of words that are included in the dictionary and then calculates the percentage of those words that fall in a specific category. Prior to being run through the program, the transcripts were edited according to the LIWC manual guidelines.

To reduce the number of analyses we conducted, we limited our analyses to the categories that were specifically related to differences between Chinese and American conceptions of emotion; that is, we compared participants' use of social/communicative words (from this point on, referred to as social words; e.g., talk, friend, acquaintance, advice, mother, give), positive emotion words (e.g., happy, good, fun, bright, merry), negative emotion words (e.g., angry, sad, miserable, nasty, mourn, hurt), and somatic words, a category we created by summing the percentage of words that were classified under sensory and perceptual processes (e.g., heard, listen, sound, view, saw, look) with those that were classified as physical states and functions (e.g., ache, sleep, heart, exhaust, hunger). Words that fell in both categories (e.g., pain, eat) were omitted from the sensory and perceptual processes category so that they would be counted only once. We examined the use of positive and negative emotion words separately because previous studies have observed that cultural differences in emotion vary as a function of valence (e.g., Kitayama et al., 2000; Tsai et al., 2002; Tsai & Levenson, 1997).

Data Analyses and Results

MANIPULATION AND DICTIONARY CHECKS

To ensure that the interview elicited significant changes in reports of emotional experience compared to baseline, we conducted pairwise *t* tests comparing reports of emotional experience during baseline with those during the interview. Analyses revealed significant differences in reports of pleasant affect, $t(59) = 2.00$, $p =$

.05, and unpleasant affect, $t(58) = -2.41, p = .019$, with participants reporting that they felt less pleasant and more unpleasant affect during the interview compared to baseline (Pleasant affect: Baseline = 2.75 [.21], Interview = 2.38 [.21]; Unpleasant affect: Baseline = .34 [.11], Interview = 2.63 [.94]). There was not a significant difference in reports of high negative activation. To ensure that the dictionary classified the majority of the words spoken for each group, we compared the capture rate (the percentage of words spoken that were contained in the LIWC dictionary) for each group. The dictionary captured more than 80% of the words spoken for all groups. Although analyses revealed that LIWC captured a significantly greater percentage of spoken words for less acculturated CA than the other two groups ($p < .05$), observed differences in word use remained significant after controlling for capture rate (EA: $M = 85.38, SE = .35$; more acculturated CA: $M = 84.78, SE = .46$; less acculturated CA: $M = 87.09, SE = .51$).

HYPOTHESIS TESTING

The conceptual hypothesis predicts that (a) less acculturated CA would use more somatic and social but fewer positive and negative emotion words than EA and (b) less acculturated CA would use more somatic and social and fewer positive and negative emotion words than more acculturated CA. The linguistic hypothesis predicts no group differences in word use. To test these predictions, we conducted omnibus ANOVAs and follow-up, planned comparisons, treating Group and Sex as between-subjects factors.

Somatic words. An ANOVA conducted on somatic words revealed that the main effect of Group, $F(2, 54) = 2.08, p = .14$, was not significant. However, consistent with the first prediction of the conceptual hypothesis, planned comparisons revealed that less acculturated CA used significantly more somatic words than EA (difference = $-.003, SE = .0001, p < .05$; standardized effect size = .62; see Figure 2, top).⁴ Sample responses from a less acculturated CA participant and an EA participant to the question, "Were you ever sick or ill when you were a child and, if so, what would happen?" are provided below; words that were classified as somatic words by LIWC are in bold.

My parents would take me to the hospital, almost all the time. Both of them. We [respondent and her classmates] needed to take an exam. . . . By that time I felt nervous for the exam. One morning I woke up, I felt **dizzy and light-headed**, and they took me to the hospital. (Response of less acculturated CA)

Um, if I got **sick** at school, my dad would usually come get me—I would just kind of stay in bed and watch TV for the rest of the day usually—if it was like after lunch or what-

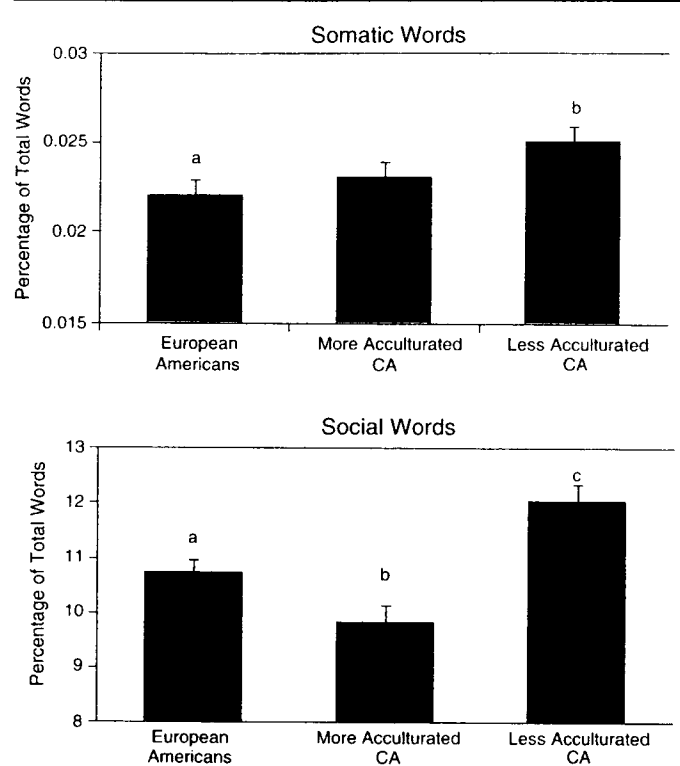


Figure 2 Use of somatic (top) and social (bottom) words (M, SE) by cultural group during the adult attachment interview.

NOTE: Different letters indicate the groups that significantly differed in word use. CA = Chinese Americans.

ever my dad would usually stay home for the rest of the day with me. (Response of EA)

Consistent with the second prediction of the conceptual hypothesis, less acculturated CA also used more somatic words than more acculturated CA, although this difference was not significant. There were no significant main effects or interactions involving Sex.

Social words. An ANOVA conducted on social words revealed a significant main effect of Group, $F(2, 54) = 11.63, p < .001$. Consistent with the first prediction of the conceptual hypothesis, planned comparisons revealed that less acculturated CA used more social words than EA (difference = $-1.30, SE = .40, p < .01$; standardized effect size = .94; see Figure 2, bottom). Sample responses from a less acculturated CA participant and an EA participant to the question, "When you were upset as a child what would you do?" are provided below; words in bold were classified as social words.

Cry a lot. I cry a lot! My **mom** . . . would comfort me. When I was 7 years old . . . I still cried, but that time, I had a few **friends**. I had a few **friends** at a school, and **we** would spend a lot of time together, my **friends**, something like that. Each time when my **dad** punished me, **he** would say, "Hey, look at your **brother**, what, how

excellent a job **he** did in school. Why can't you do that?" My **brother**, **he** was a genius. (Response of less acculturated CA)

Break things, yell, scream, threaten to kill myself, like when I was real little like before the age of 4. Yeah, uh, my **mom** says I don't remember it but when I was 2 ½ I told **her** that I was going to cut my wrists with a butter knife if **she** didn't make me chicken and dumpling soup for lunch. Not one of my prouder moments. (Response of EA)

Consistent with the second prediction of the conceptual hypothesis, less acculturated CA used more social words than more acculturated CA (M difference = -2.21 , $SE = .46$, $p < .001$, standardized effect size = 1.73). However, more acculturated CA also used fewer social words than EA (M difference = $.91$, $SE = .40$, $p < .05$, standardized effect size = $.81$). There were no significant main effects or interactions involving Sex.

Emotion words. Contrary to both predictions of the conceptual hypothesis, ANOVAs revealed no significant main effects or interactions involving Group for positive emotion words, $F(2, 54) = .90$, ns ; EA: $M = 2.02$, $SE = .08$, more acculturated CA: $M = 1.87$, $SE = .11$, less acculturated CA: $M = 2.06$, $SE = .11$, or negative emotion words, $F(2, 54) = .33$, ns ; EA: $M = 1.41$, $SE = .07$, more acculturated CA: $M = 1.33$, $SE = .09$, less acculturated CA: $M = 1.34$, $SE = .09$. There were no significant main effects or interactions involving Sex.

Summary of Study 1 Findings

Several findings were consistent with the conceptual hypothesis. Less acculturated CA used more social and somatic words than EA while being interviewed about their relationships with their parents and their early childhood experiences. Less acculturated CA also used more social and somatic words than more acculturated CA. Because all participants spoke English, these findings suggest that previously observed differences in verbal emotional expression between Chinese and EA were not due simply to differences between the Chinese and English languages. Contrary to the conceptual hypothesis, however, there were no group differences in emotion words.

Study 1, however, had some limitations. First, although the AAI has ecological validity, its format may have been too formal and structured to elicit emotion words in either group, which may explain why no group differences in positive or negative emotion words were detected. A similar reason also may explain why the occurrence of somatic words was so low. Second, the number of participants was small, especially for the two CA groups. Thus, to address these limitations and to examine whether the results would replicate in a larger

sample using a more naturalistic emotion-eliciting task, we examined variation in word use in a second study.

STUDY 2: WORD USE DURING CONVERSATIONS BETWEEN ROMANTIC PARTNERS

In this study, we had participants discuss an area of conflict in their relationship with their romantic partners. Because this task is less structured and less formal than the interview task, we thought it would elicit stronger emotion. This task also allowed us to examine whether cultural variation in word use depends on the emotional intensity of the event; that is, the task requires that participants talk about the events of the day (a neutral topic, or a topic of low emotional intensity) before discussing a conflict in their relationships (a topic of moderate to high emotional intensity). If cultural conceptions of emotion influence word use, their influence should be stronger during intense emotional events (when these conceptions are more likely to be activated) than during neutral events (when these conceptions are less likely to be activated). Examining word use during conversations of different emotional intensity also allowed us to examine changes in word use within participants, which is more consistent with previous studies of word use (e.g., Pennebaker & King, 1999; Pennebaker & Lay, 2002). Finally, our cell size was greater in the present study; each CA group included 24 couples (or 48 participants).

Method

PARTICIPANTS

The study consisted of 98 heterosexual, college-age, dating couples (50 EA, 48 CA) who were recruited from San Francisco Bay Area colleges and universities for a study of emotion. Participants were full-time college students who had been dating each other exclusively for at least 1 year, and were not living with each other. Participants received \$45 each for their participation.

EA. Fifty couples were composed of partners who were both of EA descent. Similar criteria as those used in Study 1 regarding EA's place of birth, language, and friends were used in this study.

CA. Forty-eight couples were composed of partners who were both CA. Similar criteria as those used in Study 1 regarding CA's place of birth, language, and friends were used in this study. Among CA who were born outside of the United States, the average length of time spent in the United States was 11.74 years ($SD = 4.18$). Thus, on average, the CA in our sample were exposed to American culture for at least half of their lives. As in Study 1, CA couples were divided into more acculturated and less acculturated subgroups based on whether their American orientation scores fell above or below the

median (*Mdn* American orientation score: women = 3.63, men = 3.61). There were 11 couples for which one partner fell above the median while the other fell below the median; these couples were randomly and equally distributed across the two groups. As in Study 1, although the CA groups were labeled as more or less acculturated based on their orientation to American culture, they also differed in their orientation to Chinese culture.⁵ Although all CA reported growing up in a household where a Chinese dialect was spoken, CA varied in their proficiency in Chinese and whether they regarded themselves as bilingual. Specifically, less acculturated CA reported being more proficient in Chinese than more acculturated CA, on a 5-point scale (1 = *not at all* to 5 = *extremely proficient*), $F(1, 45) = 21.11, p < .001$ (see Table 1 for *Ms* and *SDs*). All (100%) of the less acculturated CA couples reported that both partners were bilingual, whereas 66% of more acculturated CA couples reported that both partners were bilingual and 25% of more acculturated CA reported that one partner was bilingual.

One-way ANOVAs revealed that EA, more acculturated CA, and less acculturated CA couples did not differ in their mean age or SES. As in Study 1, differences emerged in English language proficiency, $F(2, 95) = 19.04, p < .001$. Although means were above 4.5 out of a 5-point scale (1 = *not at all proficient*, 5 = *extremely proficient*) for all groups, less acculturated CA reported being less proficient in English than EA or more acculturated CA. Unless otherwise noted, results did not change when proficiency in English was treated as a covariate. Couples did not differ in the length of their relationships, how much time they spent together, or how committed they were to their relationships (see Table 1, bottom), suggesting that observed differences in talk about emotion were not due to group differences in these aspects of couples' relationships.

QUESTIONNAIRES

Cultural orientation. Participants completed the GEQ, as in Study 1. Cronbach's standardized alpha for the CA sample was .92 ($n = 93$) for the GEQC and .91 ($n = 95$) for the GEQA. Cronbach's standardized alpha for the GEQA for our EA sample was .87 ($n = 99$).

Areas of disagreement form. The topics that couples discussed during the conflict conversation were based on their responses to the Couples' Problem Inventory (Gottman, Markman, & Notarius, 1977), in which they rated the perceived severity of 10 relationship issues (e.g., sex, communication) on a 0 to 100 scale (0 = *don't disagree at all* to 100 = *disagree very much*), completed prior to arriving at the lab. Participants were asked to discuss areas of conflict that both partners rated as causing the most disagreement. There were no group differences in

the topics that couples discussed or the rated severity of the topic that they discussed. The majority of participants discussed topics related to communication, family, friends, and jealousy (EAs = 50%, more acculturated CA = 50%, less acculturated CA = 62.5%).

Emotion inventory. We administered emotion inventories after each conversation to ensure that participants' reports of emotional experience changed from the events-of-the-day conversation to the conflict conversation. For female partners, Cronbach's alphas were .78 and .79 (events of the day, conflict) for the pleasant composite and .71 and .82 for the high negative activation composite. For the male partners, Cronbach's alphas were .74 and .76 for the pleasant composite and .78 and .80 for the high negative activation composite.

PROCEDURE

The procedures in this study were based on those originally developed by Levenson and Gottman (1983) to study emotional responding during marital interaction and are similar to those used in Tsai and Levenson (1997) to examine cultural variation in emotional responding during dyadic interaction. Partners were instructed not to see each other for at least 8 hours prior to coming to the laboratory. Upon arriving at the laboratory, partners were asked to relax for 3 minutes (baseline period). Couples were then asked to discuss what happened to them during the day (events-of-the-day conversation). Next, couples were instructed to discuss an area of conflict in their relationships (described above) and to achieve some resolution of the conflict (conflict conversation).⁶ Each conversation lasted 15 minutes.

DATA REDUCTION

Transcripts for male and female partners and for the events-of-the-day and conflict conversations were run through LIWC separately. As in Study 1, we limited our analyses to the categories that were related to Chinese and American conceptions of emotion: somatic, social, positive emotion, and negative emotion words.

Data Analyses and Results

MANIPULATION AND DICTIONARY CHECKS

To ensure that the conflict conversations elicited significant changes in reports of emotional experience compared to the events-of-the-day conversation, we conducted 3 (Group: EA, more acculturated CA, less acculturated CA) \times 2 (Topic: events of the day, conflict) \times 2 (Partner: male, female) repeated measures ANOVAs for reports of high negative activation, unpleasant affect, and pleasant affect. As predicted, a significant main effect of topic emerged for all three types of emotional experience: high negative activation, $F(1, 95) = 112.39, p < .001$; unpleasant affect, $F(1, 94) = 68.71, p < .001$; pleas-

ant affect, $F(1, 95) = 97.83, p < .001$. Compared to the events-of-the-day conversation, participants reported experiencing more high negative activation, more unpleasant affect, and less pleasant affect during the conflict conversation: high negative activation, events of the day = .75, $SE = .07$, conflict = 1.92, $SE = .13$; unpleasant affect, events of the day = .38, $SE = .09$, conflict = 1.73, $SE = .18$; pleasant affect, events of the day = 3.25, $SE = .12$, conflict = 2.03, $SE = .13$. There were no significant main effects or interactions involving Group, suggesting that the conflict conversation successfully elicited changes in reports of emotional experience for all three groups. As in Study 1, the dictionary captured more than 80% of the words spoken for each group. Unlike Study 1, there was not a significant main effect of Group in mean capture rate.

HYPOTHESIS TESTING

The conceptual hypothesis predicts that (a) less acculturated CA would use more somatic and social and fewer positive and negative emotion words than EA and (b) less acculturated CA would use more somatic and social and fewer positive and negative emotion words than more acculturated CA. These predictions were the same as those tested in Study 1. The conceptual hypothesis also predicts (c) that group differences would be more pronounced during the emotional (conflict) conversation, when conceptions of emotion are particularly salient, than the neutral (events-of-the-day) conversation, and similarly, (d) that group differences would emerge in the change in word use from the events of the day to the conflict conversations, with less acculturated CA showing greater increases in somatic and social words and greater decreases in positive and negative emotion words than EA or more acculturated CA. The linguistic hypothesis predicts no group differences in word use.

Somatic words. An overall 3 (Group: EA, more acculturated CA, less acculturated CA) \times 2 (Topic: events of the day, conflict) \times 2 (Partner: male, female) repeated-measures ANOVA was conducted on somatic words. Analyses revealed a significant main effect of Group, $F(2, 95) = 11.27, p < .001$, qualified by a significant Group \times Topic interaction, $F(2, 95) = 5.00, p < .01$. Consistent with the first prediction of the conceptual hypothesis, planned comparisons revealed that less acculturated CA used significantly more somatic words than EA (EA: $M = 3.15, SE = .11$; less acculturated CA: $M = 4.04, SE = .16$, difference = .90, $SE = .20, p < .001$, standardized effect size = .99). Consistent with the second prediction of the conceptual hypothesis, less acculturated CA used more somatic words than more acculturated CA, although this difference was not significant (more acculturated CA: $M = 3.69, SE = .16$, less acculturated CA: $M = 4.04, SE = .16$,

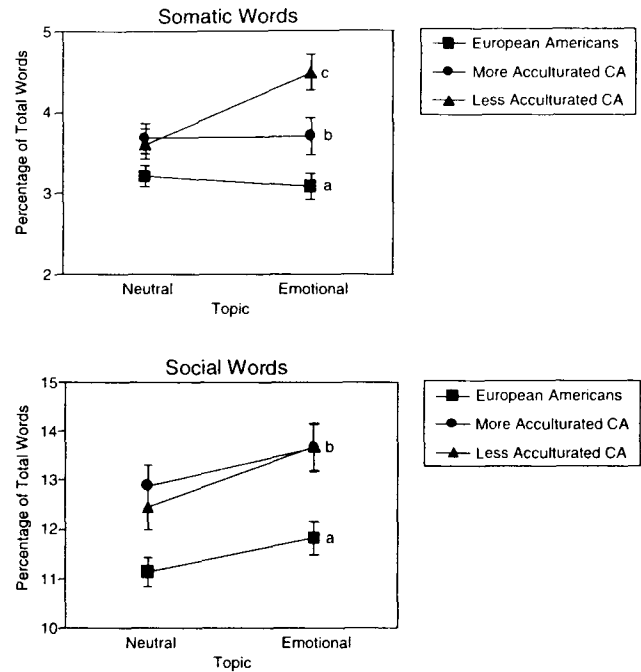


Figure 3 Use of somatic (top) and social (bottom) words (M, SE) by cultural group during the neutral (events of the day) and emotional (conflict) conversations.

NOTE: Different letters indicate the groups that significantly differed in word use. CA = Chinese Americans.

difference = $-.36, SE = .23, ns$, standardized effect size = .31) and was driven by differences during the conflict conversation. Consistent with the third prediction of the conceptual hypothesis, planned comparisons revealed that the main effect of Group was more pronounced during the emotional than the neutral conversation: Although the main effect of Group was significant during the conflict conversation, $F(2, 95) = 13.25, p < .001$, it approached significance during the event-of-the-day conversation, $F(2, 95) = 2.69, p = .07$ (see Figure 3, top). The Group \times Partner interaction was not significant, suggesting that this group difference held for both men and women.⁷

To test the fourth prediction of the conceptual hypothesis, we conducted a 3 \times 2 (Group \times Partner) ANOVA on the change in use of somatic words from the events of the day to the conflict conversations. Consistent with the fourth prediction of the conceptual hypothesis, a significant main effect of Group emerged, $F(2, 95) = 5.00, p < .01$. Planned comparisons revealed that less acculturated CA showed greater increases in somatic word use than more acculturated CA (less acculturated CA: $M = .86, SE = .26$, more acculturated CA: $M = .03, SE = .26$; Difference = $-.84, SE = .37, p < .05$, standardized effect size = .46) and than EA, who showed decreases in somatic word use (EA: $M = -.12, SE = .18$; less accultur-

ated CA: $M = .86$, $SE = .26$; Difference = $-.98$, $SE = .32$, $p < .01$; standardized effect size = $.54$). The Group \times Partner interaction was not significant, suggesting that these group differences held for both men and women.⁸ Thus, for somatic word use, we observed support for all four predictions of the conceptual hypothesis.

Social words. An overall 3 (Group: EA, more acculturated CA, less acculturated CA) \times 2 (Topic: events of the day, conflict) \times 2 (Partner: male, female) repeated-measures ANOVA was conducted on social words. Analyses revealed a significant main effect of Group, $F(2, 95) = 8.96$, $p < .001$, qualified by a significant Group \times Topic interaction, $F(2, 95) = 4.42$, $p < .05$. Consistent with the first prediction of the conceptual hypothesis, planned comparisons revealed that less acculturated CA used more social words than EA (EA: $M = 11.48$, $SE = .28$, less acculturated CA: $M = 13.06$, $SE = .40$, difference = -1.58 , $SE = .49$, $p < .01$, standardized effect size = $.57$). Contrary to the second prediction of the conceptual hypothesis, however, less acculturated and more acculturated CA did not significantly differ in their use of social words (more acculturated CA: $M = 13.26$, $SE = .40$; less acculturated CA: $M = 13.06$, $SE = .40$; difference = $.20$, $SE = .57$, ns , standardized effect size = $.07$). Consistent with the third prediction of the conceptual hypothesis, the main effect of Group was more pronounced during the conflict conversation than the events-of-the-day conversation. Whereas the main effect of Group was significant during the conflict conversation, $F(2, 95) = 10.07$, $p < .001$, it only approached significance during the events-of-the-day conversation, $F(2, 95) = 2.34$, $p = .10$ (see Figure 3, bottom).^{9, 10}

To test the fourth prediction of the conceptual hypothesis, we conducted a 3 \times 2 (Group \times Partner) ANOVA on the change in use of social words from the events of the day to the conflict conversations. Consistent with the fourth prediction of the conceptual hypothesis, a significant main effect of Group emerged, $F(2, 95) = 4.42$, $p < .05$, with less acculturated CA showing greater increases in social word use than EA (EA: $M = .32$, $SE = .42$; less acculturated CA: $M = 2.38$, $SE = .60$; difference = -2.05 , $SE = .73$, $p < .01$, standardized effect size = $.49$) and more acculturated CA (more acculturated CA: $M = 1.69$, $SE = .60$; less acculturated CA: $M = 2.38$, $SE = .60$; difference = $-.69$, $SE = .85$, ns , standardized effect size = $.23$), although the latter difference was not significant.¹¹ Thus, for social words, we found support for predictions 1, 3, and 4 but not for prediction 2 of the conceptual hypothesis.

Emotion words. Overall 3 (Group: EA, more acculturated CA, less acculturated CA) \times 2 (Topic: events of the day, conflict) \times 2 (Partner: male, female) repeated-measures ANOVAs were conducted on positive and negative

emotion words. Contrary to all predictions of the conceptual hypothesis, the main effects and interactions involving Group were not significant for either positive—main effect of Group, $F(2, 94) = 1.09$, ns ; Group \times Topic interaction, $F(2, 94) = 2.46$, ns ; EA: $M = 2.07$, $SE = .07$; more acculturated CA: $M = 2.12$, $SE = .10$; less acculturated CA: $M = 2.25$, $SE = .10$ —or negative emotion words—main effect of Group, $F(2, 95) = 1.84$, ns ; Group \times Topic interaction, $F(2, 95) = 1.02$, ns ; EA: $M = 1.36$, $SE = .08$; more acculturated CA: $M = 1.16$, $SE = .12$; less acculturated CA: $M = 1.28$, $SE = .12$. We conducted 3 \times 2 (Group \times Partner) ANOVAs on the changes in positive and negative emotion word use between the two conversations that also revealed no significant main effects or interactions involving Group. Thus, consistent with Study 1, no support for the conceptual hypothesis was found for positive or negative emotion words.

Summary of Study 2 Findings

Overall, our findings with respect to social and somatic words supported the conceptual hypothesis. Less acculturated CA used more somatic and social words than did EA, and less acculturated CA used more somatic words than more acculturated CA. Group differences in social and somatic words were more pronounced during the emotional (conflict) conversation than during the neutral (events of the day) conversation. Finally, less acculturated CA demonstrated greater increases in social and somatic words than did EA. For social and somatic words, the only finding that did not support the conceptual hypothesis was the lack of difference in the use of social words between less acculturated and more acculturated CA. Positive and negative emotion word use were the only variables for which support for the conceptual hypothesis did not emerge.

GENERAL DISCUSSION

Cultural Conceptions and Talk About Emotion

In studies of cultural variation in verbal emotional expression, language is typically conflated with other aspects of culture (e.g., cultural conceptions and practices). In the present studies, we attempted to dissociate the effects of cultural conceptions of emotion from the effects of language on verbal expressions of emotion by examining whether culture influences word use, even when people speak the same language. Across the two studies, less acculturated CA used more somatic and social words during emotional events than EA when they were speaking English. These differences are consistent with American and Chinese conceptions of emotion and suggest that cultural differences in talk about emotion are not necessarily bound to a specific language. Moreover, in Study 2, cultural differences in social and

somatic word use were more pronounced during the conflict than the events of the day conversation, suggesting that cultural conceptions of emotion selectively shape these words during events of moderate emotional intensity.

Surprising, across both studies, group differences did not emerge in the use of positive or negative emotion words. Given that the overall incidence of emotion words in our studies was comparable to that found in other studies (e.g., Mehl & Pennebaker, 2003; Pennebaker & Lay, 2002), these data suggest that regardless of cultural norms, the use of emotion words in everyday speech is extremely low. Thus, studies that explicitly elicit intense positive and negative emotional states may be necessary to assess whether cultural conceptions of emotion shape the use of emotion words.

Variation Among Chinese Americans

In general, as predicted by the conceptual hypothesis, less acculturated CA talked about emotion in ways that were more consistent with Chinese conceptions of emotion compared to more acculturated CA. In future studies, we plan to use longitudinal designs to examine whether changes in word use index changes in acculturation within individuals. Of interest, more acculturated CA used fewer social words in Study 1. This pattern of results supports previous observations that under certain conditions, more acculturated CA behave in ways that are even more consistent with American norms than do their EA counterparts (Rhee, Uleman, Lee, & Roman, 1995). To further investigate this issue, we plan to examine the degree to which the word use of more acculturated CA can be manipulated by increasing the salience of American and Chinese norms of expression.

Limitations and Future Directions

Several limitations to the present work raise additional questions for future research. First, one might argue that the differences between CA groups were due to differences in fluency in Chinese. To address this possibility, we controlled for fluency in Chinese when comparing the two CA groups. In Study 1, the differences between the two groups were still significant after we controlled for fluency in Chinese. In Study 2, although the difference in somatic word use between more and less acculturated CA was no longer significant, the means remained in the predicted direction. Overall, these findings suggest that fluency in Chinese cannot account for the observed differences in English word use. However, they do not rule out the possibility that early exposure to the Chinese language shaped English word use. For example, it is possible that language exposure may shape cultural conceptions of emotion early in development and that these cultural conceptions may

become "imprinted," or difficult to reverse later in development (Whorf, 1956). As a result, they may continue to shape verbal emotional expression regardless of the language of expression. A recent study, however, found that Chinese and American deaf children produced culturally specific narratives, even though they did not have access to conventional language, suggesting that to some degree, verbal language is not required for the transmission of cultural ideas and practices (Van-Deusen-Phillips, Goldin-Meadow, & Miller, 2001). Thus, future studies should reveal the degree to which verbal language is required for cultural learning.

Second, despite its strengths, LIWC does not account for the specific context in which particular words are used. As a result, we do not know how our participants were using somatic and social words. Future studies that investigate the context in which words are spoken may more specifically elucidate how cultural conceptions shape word use.

Finally, the present studies cannot speak to whether the psychological, physical, and social correlates of word use are similar or different across cultures. Pennebaker et al. (1997) found that in the United States and New Zealand, the greater use of positive emotion words was associated with more positive health outcomes. Whether this association holds for specific cultural groups within these countries or in other countries remains unknown. Indeed, different words may be associated with health outcomes in different cultures. For example, based on our findings, we would predict that the use of social and somatic words would be more strongly correlated with health outcomes for less acculturated CA than for EA.

Practical and Scientific Implications

Given the strong emphasis placed on verbal expression in a variety of American educational, occupational, and clinical settings, and the increasing cultural diversity of individuals in these settings, the present findings have important practical applications. Specifically, teachers, employers, and clinicians should account for the possibility that their students, employees, and patients may be speaking English in ways that reflect their cultural conceptions and practices. For example, in clinical settings, English-speaking Chinese American patients may use social and somatic words to express their emotions. Clinicians who are unaware of cultural differences in word use may mistakenly view these patients as denying their emotions, resulting in misdiagnosis and/or inappropriate treatment.

The present findings have important scientific implications as well. First, they broaden our understanding of language by supporting the notion that even within a society in which individuals share a common language, different communities may have different "communal

lexicons" that "reflect the common concerns and expertise of the communities that they belong to" (Clark, 1998, p. 84; Clark & Clark, 1977). Second, the present findings expand our understanding of emotional expression, suggesting that some words, although not directly referring to an emotional state, might nonetheless carry important emotional meaning. Finally, the present findings have important implications for current studies of language and thought. Recently, scientists have revisited and refined Whorf's (1956) claim that different languages impose different views of the world on their speakers (e.g., Gentner & Goldin-Meadow, 2003). Although investigators have found performance on nonlinguistic cognitive tasks to vary as a function of specific language use (for review, see Boroditsky, 2003), they have not ruled out the possibility that these differences are mediated by aspects of culture that are not bound to language. Although many scholars would argue that cultural conceptions and language are inextricably intertwined, we argue that they may be dissociated by studying individuals who are exposed to multiple cultures and languages. Using this approach, we found that cultural variation in talk about emotion persists even when individuals are speaking the same language.

In summary, we compared the word use of individuals who varied in their orientation to American and Chinese cultures when they were speaking English. Consistent with differences in cultural conceptions of emotion, less acculturated Chinese Americans used more social and somatic words than European Americans. These findings suggest that even within the confines of the same language, culture can shape how people talk about emotion.

NOTES

1. Researchers have used the term "Chinese American" in a variety of ways. We use the term to refer to individuals of Chinese descent living in the United States.

2. Analyses of variance revealed significant differences in orientation to Chinese culture between more and less acculturated Chinese Americans (CA), $F(1, 28) = 36.21, p < .001$. More acculturated CA were significantly less oriented to Chinese culture than less acculturated CA (see Table 1 for *M*s, *SD*s). We decided to divide CA by their orientation to American culture rather than their orientation to Chinese culture because there was greater within-group variation in orientation to American culture than orientation to Chinese culture. However, to ensure that dividing the CA by their levels of orientation to American culture did not bias our results, we also divided the CA sample into those who were more or less oriented to Chinese culture, conducted similar analyses, and found similar results.

3. Watson and Tellegan's (1985) two-dimensional map of affective space classifies affective states into the following octants: (a) pleasant (e.g., happiness, contentment), (b) high positive activation (e.g., excitement, enthusiasm), (c) strong engagement (e.g., aroused, astonished), (d) high negative activation (e.g., hostile, fearful), (e) unpleasant (e.g., sadness, unhappy), (f) low positive activation (e.g., dull, sleepy), (g) disengagement (e.g., quiet, still), and (h) low negative activation (e.g., calm, peacefulness). To reduce the number of items we included in our inventory, we assessed three of the eight octants.

4. Although the means were in the same direction, group differences were no longer significant when we controlled for socioeconomic status (SES), proficiency in English, or capture rate, perhaps because the addition of the covariates decreased our statistical power.

5. Analyses of variance revealed significant group differences in orientation to Chinese culture, $F(1, 46) = 52.66, p < .001$; more acculturated CA were less oriented to Chinese culture than less acculturated CA (see Table 1, bottom). As in Study 1, we divided the CA sample into those who were more and less oriented to Chinese culture and conducted similar analyses to see if the results changed when we divided CA by their Chinese orientation; they did not.

6. Couples were also randomly assigned to one of two conditions. In one condition, couples discussed their conflict in a room by themselves. In another condition, couples discussed their conflict in the presence of an authority figure; however, because our findings did not vary by condition, we will not discuss this manipulation further.

7. The main effect of Partner was also not significant; however, there was a significant Topic \times Partner interaction, $F(1, 95) = 8.70, p < .01$. Men showed significant increases in the use of somatic words during the conflict conversation as compared to the events-of-the-day conversation, whereas women did not.

8. There was, however, a significant main effect of Partner, $F(1, 95) = 8.70, p < .01$, with men showing greater increases in the use of somatic words than women (men: $M = .48, SE = .16$; women: $M = .03, SE = .15$) across cultural groups.

9. Although there were not significant group differences in the topic that couples discussed, to ensure that the greater use of social words was not due to a larger percentage of less acculturated CA who discussed topics related to social relationships (e.g., communication, jealousy), we conducted the same analysis on couples who did not discuss these topics. The main effect of Group remained significant, $F(2, 43) = 7.35, p < .01$. Although the means were in the predicted direction, the Group \times Topic interaction was not significant, possibly due to the reduction in cell size.

10. The main effect of Partner was significant, $F(1, 95) = 13.52, p < .001$, with female partners using more social words than male partners. In addition, there was a significant Group \times Partner \times Topic interaction, $F(2, 95) = 4.09, p < .05$. Planned comparisons revealed that there was a significant main effect of Group for female partners during the events-of-the-day conversation: EA women used fewer social words than more acculturated and less acculturated CA women. During the conflict conversation, however, there was no such interaction: the main effect of Group was significant for both male and female partners.

11. Although there was not a significant main effect of Partner, there was a significant Group \times Partner interaction, $F(2, 95) = 4.05, p < .05$. Although the group differences were in the predicted direction for both male and female partners, the main effect of Group was significant for male partners, $F(2, 95) = 5.94, p < .01$, and approached significance for female partners, $F(2, 95) = 1.80, p < .20$.

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