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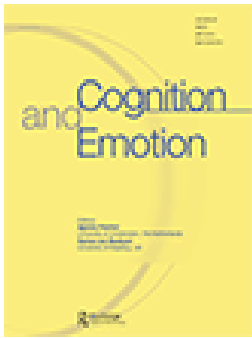


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BRIEF ARTICLE

## The relationship between momentary emotions and well-being across European Americans, Hispanic Americans, and Asian Americans

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### ABSTRACT

Cultural differences in the emphasis on positive and negative emotions suggest that the impact of these emotions on well-being may differ across cultural contexts. The present study utilised a momentary sampling method to capture average momentary emotional experiences. We found that for participants from cultural contexts that foster positive emotions (European Americans and Hispanic Americans), average momentary positive emotions predicted well-being better than average momentary negative emotions. In contrast, average momentary negative emotions were more strongly associated with well-being measures for Asian Americans, the group from a cultural context that emphasises monitoring of negative emotions. Furthermore, we found that acculturation to American culture moderated the association between average momentary positive emotions and well-being for Asian Americans. These findings suggest the importance of culture in studying the impact of daily emotional experiences on well-being.

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### KEYWORDS

Positive emotions; negative emotions; culture; momentary sampling method; life satisfaction; depressive symptoms

What kind of information do people use when they evaluate how happy they are? Studies show that people take into account a range of chronically available and situationally specific cues to produce reports of their levels of general well-being. These sources of information include health, income, educational background, societal norms regarding well-being, and hedonic state, to name just a few (Diener, Oishi, & Lucas, 2003). "The affect-as-information" theory suggests that affect is an essential part of evaluative judgments, such as evaluation of one's well-being (Schwarz & Clore, 1983). Many studies have documented that reports of positive and negative emotions predict life satisfaction (see Diener et al., 2003, for a review). For example, Suh, Diener, Oishi, and Triandis (1998) studied college students from 40 countries and found that retrospective reports of heightened positive emotions and dampened negative emotions were associated with more life satisfaction.

Notably, these effects were stronger in more individualistic nations (Suh et al., 1998). Subsequent studies have demonstrated that the relative importance of positive and negative emotions to evaluation of life satisfaction varies depending on acculturation and cultural characteristics, such as individualism and self-expression values (Kuppens, Realo, & Diener, 2008). One way to interpret these findings is to assume that culture shapes the extent to which people's well-being depends on their actual emotions. Reports of emotions and well-being may correlate more strongly in some cultural contexts

because emotions truly matter more for well-being there. Another possibility is that these patterns reflect culturally shaped reporting tendencies. The observed associations between emotions and well-being reflect a blend of true associations between these constructs and associations that are due to shared ways of describing affect. Stronger associations between emotions and well-being may be due to the presence of clear and pervasive norms regarding desirability or importance of these emotions and well-being.

Although reporting tendencies can affect different types of subjective reports, concerns about them are particularly salient for global or retrospective measures of affect, used in most prior studies examining the relationship between emotional experience and well-being across cultural contexts. Emotions that are reported in general terms or retrospectively can differ from the momentary experiences. According to the accessibility model of emotional reports by Robinson and Clore (2002), people systematically access different sources of information in evaluating their affect depending on the time frame on their reports (e.g. past month, right now, etc.). Although in-the-moment (e.g. "How do you feel now?") as well as retrospective (e.g. "How did you feel last month?") reports of emotions are affected by many sources of information, including experiential information, heuristics (e.g. peak-end heuristic), situation-specific beliefs (e.g. how do I feel in this type of situation) and generalised beliefs (e.g. how do I generally feel), the relative weight of

these sources of information depends on type of reports (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Robinson & Clore, 2002). Global reports tend to be driven by norms and beliefs about emotions more so than by the experiential and situation-specific information.

One source of such norms and beliefs about emotions is culture. Although cultural norms do affect emotions in the moment, much of their influence shapes the beliefs people hold about emotions (Tsai, Knutson, & Fung, 2006). Indeed, retrospective and global reports of emotions show larger cultural differences compared with momentary reports (Oishi, 2002), which are relatively less vulnerable to the influence of beliefs about emotions. As such, the inclusion on momentary reports can be very useful for cross-cultural comparisons (Tov & Scollon, 2012) by allowing us to examine whether actual emotions unfolding in people's lives show stronger associations with well-being in some cultural contexts than in others, or whether these differences reflect ways in which such emotional events are remembered and reported after the fact.

The present study focused on the aggregated emotional experiences assessed in the moment (average momentary emotions), and on the ways in which these emotions are reflected in people's reports of their well-being across cultural groups. First, we start by briefly reviewing what we know regarding cultural differences in emotional experiences and their associations with well-being.

### Cultural norms of emotions

Emotional experiences are shaped by cultural context and the shared values, goals, concerns, and actions of its members (Mesquita & Frijda, 1992). Individuals who are repeatedly exposed to emotional practices of a host cultural context become acculturated to new emotional norms, showing a pattern of emotional functioning that is characteristic of their host culture (De Leersnyder, Mesquita, & Kim, 2011). Studies comparing different cultural contexts have documented differences in emotional experiences (Diener et al., 2003). In particular, it has been repeatedly shown that East Asian respondents tend to report less intense and less frequent positive emotions than European Americans (see Tov & Scollon, 2012, for review). One explanation for this difference is that cultural norms emphasise appropriateness and desirability of positive emotions among North Americans (Eid & Diener, 2001). Although evidence remains limited, researchers have also characterised Hispanic cultural contexts as sharing a similar set of positivity norms (Soto, Levenson, & Ebling, 2005; Triandis, Marin, Lisansky, & Betancourt, 1984).

In contrast, previous research has consistently shown that East Asian cultural contexts do not place as much importance or value on positive emotions, and particularly high arousal positive emotions, as the North American and Hispanic cultural contexts (Tsai et al., 2006). Instead, East Asian cultural contexts place relatively more emphasis on

preventing undesirable outcomes and, consequently, on attending to negative affect as an important cue (Hama-mura, Meijer, Heine, Kamaya, & Hori, 2009; Noguchi, Gohm, Dalsky, & Sakamoto, 2007). Taken together, evidence suggests that European American (and possibly Hispanic American) cultural contexts foster the experience and reporting of positive emotions to a greater degree than East Asian cultural context. In contrast, East Asians may be more sensitive to negative emotions compared to their European American counterparts.

Cultural emphases on positive and negative emotions may help account for the different patterns of associations between emotional experiences and well-being in different cultural contexts. Studies suggest that positive emotions show stronger links to well-being in European American cultural contexts. Leu, Wang, and Koo (2011) showed that dampened positive emotions were associated with the frequency of depressive symptoms, a negative indicator of well-being (Lewinsohn, Redner, & Seeley, 1991), among European Americans and Asian Americans but not among immigrant Asians. The fact that Asian Americans who were exposed and acculturated to American culture with its emphasis of positive emotions showed the same pattern of results as European Americans gave further evidence that culture, rather than inborn group characteristics, accounted for these differences. In addition, Oishi (2002) found that the best, but not the worst, day of the week predicted the week-as-a-whole satisfaction for European Americans, while the opposite pattern characterised Asian Americans (Study 1). Findings are less consistent for cultural differences in the associations between negative emotions and well-being, with some, but not all, studies showing that these associations may be stronger in East Asian samples (Kuppens et al., 2008; Leu et al., 2011). This pattern may reflect the fact that cultural norm differences seem to be more pronounced for positive than negative emotions.

As mentioned earlier, these findings can be interpreted in two different ways. On the one hand, they may reflect true differences in the associations between emotions and well-being. That is, cultural emphases on particular emotions may affect the actual importance of these emotions for well-being, or vice versa. On the other hand, it is also possible that the cultural differences in the relationships between emotional experience and well-being observed in some of the prior studies were due in part to their reliance on the global measures of emotional experience. In contexts with clear and widely shared emotional norms, these associations may reflect beliefs about the importance and value of these emotions. Because global measures of emotions are more likely to reflect such beliefs, studies that use these measures cannot easily differentiate between these possibilities. Fortunately, measures of momentary emotions are more likely to reflect experiential information, allowing us to build on prior work to examine whether emotions that are repeatedly experienced in daily lives predict well-being

differently across cultural contexts. The present study aims to add to the literature by utilising the experience sampling method and by including a group of Hispanic Americans, an understudied cultural group.

### The present study

The main aim of the present study was to examine the relationship between average momentary positive and negative emotions and well-being across participants from different cultural contexts. We focused on groups that are thought to differ in their emphases on the value of positive and negative emotions: European Americans, Hispanic Americans, and Asian Americans. We assessed levels of life satisfaction and depressive symptoms, which have often been used as an indicator of low happiness (Diener et al., 2003), to measure well-being. Moreover, unlike previous studies that have relied on retrospective or trait-level reports of emotions (e.g. Kuppens et al., 2008; Leu et al., 2011), we used average momentary reports.

We tested the following predictions: (1) if the patterns observed in prior studies are driven by cultural differences in true associations between emotions and well-being, it is possible that for European Americans and Hispanic Americans, the ethnic groups that come from cultural contexts which place an emphasis on positive emotions, average momentary positive emotions would matter more in predicting levels of life satisfaction and depressive symptoms than for Asian Americans, whose cultural context places less emphasis on positive emotions. On the other hand, if the associations observed in prior work are driven by cultural beliefs about positive emotions, we may not see cultural differences in the strength of association between average momentary positive emotions and well-being. (2) Given that previous studies have been inconsistent regarding the effects of negative emotions on well-being (Kuppens et al., 2008; Leu et al., 2011), we did not have a specific prediction about the effect of negative emotions for the three cultural groups. (3) Finally, the present study also examined whether the level of acculturation to American culture with its emphasis on positivity makes a difference in the relationship between positively and negatively

valenced average momentary emotions and well-being. For this hypothesis, we focused on Asian Americans, the immigrant group that is acculturating to a new set of norms that emphasises positive emotions more than their native cultural context.

### Methods

#### Participants

Participants were 32 European Americans (13 men), 25 Hispanic Americans (10 men), and 33 Asian Americans (7 men).<sup>1</sup> They were recruited through a psychology subject pool and advertisements. In order to maintain cultural homogeneity of each group, potential participants were screened based on their cultural backgrounds.<sup>2</sup> Participants received course credits or cash compensation for their participation (Table 1).

#### Materials and procedure

**Life satisfaction.** The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a five-item scale measuring the evaluative component of subjective well-being. The items ask how satisfied the individuals are with their lives using 7-point Likert scales (1 = "strongly disagree"; 7 = "strongly agree"). The SWLS had adequate reliability across cultural groups ( $\alpha = .93$  for European Americans; .90 for Hispanic Americans; .90 for Asian Americans).

**Depression level.** Depression level was assessed using the 21-item Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). The symptoms were rated for severity on a 4-point scale and these ratings were then summed to obtain a total score. The BDI had adequate reliability across cultural groups ( $\alpha = .92$  for European Americans; .90 for Hispanic Americans; .90 for Asian Americans).

**Momentary reports of emotions.** Participants completed brief questionnaires in response to personal digital assistant's (PDA; Palm Z22; Palm USA, New York, NY) prompts. The PDA was programmed to sound prompts at random intervals (approximately every 2–3 hours) for a total of nine times a day. This questionnaire assessed in-the-moment positive and negative emotions (e.g.

Table 1. Sample characteristics.

	EA		HA		AA		F	df
	M	SD	M	SD	M	SD		
Age	21.38 <sub>a</sub>	4.35	20.76 <sub>a</sub>	4.68	22.18 <sub>a</sub>	5.05	0.67	87
Family income	3.47 <sub>a</sub>	1.05	2.68 <sub>a</sub>	1.03	3.21 <sub>a</sub>	1.02	0.40	69
Years in US	n/a	n/a	11.43 <sub>a</sub>	5.59	9.86 <sub>a</sub>	9.86	0.15	22
GEQ-American**	4.27 <sub>a</sub>	0.35	3.60 <sub>b</sub>	0.50	3.79 <sub>b</sub>	0.66	12.93	86
GEQ-Asian/Hispanic**			3.97 <sub>a</sub>	0.52	3.49 <sub>b</sub>	0.67	8.59	56
Number of responses	64.16 <sub>a</sub>	19.44	55.40 <sub>a</sub>	23.79	57.48 <sub>a</sub>	20.45	1.40	87
Native language fluency**			4.72 <sub>a</sub>	0.52	4.16 <sub>b</sub>	0.91	7.51	57

Notes: EA: European Americans; HA: Hispanic Americans; AA: Asian Americans. Measured on a 1–5 scale of increasing self-reported family income while growing up, with "3" equivalent to middle-class income. GEQ: General Ethnicity Questionnaire. Means having the same subscript within rows do not differ significantly.

\*\* $p < .01$ .

"Immediately before the beep how sad did you feel?") that are selected from an emotion circumplex (Russell, 1980). Positive emotions were sampled using seven items ("pleasant", "calm", "excited", "happy", "interested", "sociable", and "satisfied") ( $\alpha = .85$  for European Americans; .83 for Hispanic Americans; .90 for Asian Americans). Negative emotions were sampled using five items ("nervous", "sad", "stressed", "upset", and "irritated") ( $\alpha = .82$  for European Americans; .77 for Hispanic Americans; .81 for Asian Americans). The questions used a 5-point Likert scale (1 = "None"; 5 = "Extreme"). Since the present study was not as examining moment-to-moment fluctuations, but rather overall emotional responses to a variety of situations occurring in daily lives, the average 10-day levels of in-the-moment positive and negative emotions were used. A number of prior studies have used this approach (Scollon, Diener, Oishi, & Biswas-Diener, 2004).

**Acculturation level.** Participants completed the General Ethnicity Questionnaire – American version (GEQ-A, Tsai, Ying, & Lee, 2000). This questionnaire measures the level of acculturation to American culture. Specifically, the GEQ-A assessed participants' preferences and actual involvement in specific life domains including social affiliation, activities, attitudes, exposure, food, and language. Participants rated 38 items on a 5-point Likert scale ranging from 1 (very much) to 5 (not at all) ( $\alpha = .84$  for European Americans; .91 for Hispanic Americans; .93 for Asian Americans).

### Data analysis plan

In order to examine the relationship between average momentary emotions and well-being, and their potentially varying strength of associations by cultural groups, we used hierarchical multiple regressions with cultural groups, average momentary positive and negative emotions as predictors and indicators of well-being (i.e. life satisfaction, depression) as outcomes. In Step 1, to examine the difference in well-being across cultural groups, dummy-coded cultural groups were entered, with European Americans as a reference group. In Step 2, average momentary positive emotions and the interaction terms between average momentary positive emotions and the two dummy variables were added. In Step 3, average momentary negative emotions and interaction terms between average momentary negative emotions and the two dummy variables were added. Following Aiken and West (1991), average momentary positive and negative emotions were mean-centred and the interaction terms were computed with these centred variables.

## Results

### Descriptives of momentary emotions and well-being measures

There was a cultural difference in average momentary positive emotions,  $F(2, 87) = 3.61, p = .031$ . Bonferroni *post hoc*

analysis revealed that Asian Americans reported lower momentary positive emotions compared to European Americans and Hispanic Americans. There was no cultural difference in average momentary negative emotions,  $F(2, 87) = 1.51, p = .228$  (Table 2).

### Average momentary emotions and life satisfaction

In Step 1, there was no cultural group difference in life satisfaction ( $R^2 = .09, F(2, 81) = 3.74, p = .028$ ). In Step 2, average momentary positive emotions were positively associated with life satisfaction ( $\beta = .65$ ). There was a significant interaction effect between being Asian American and average momentary positive emotions ( $\beta = -.37$ ) ( $\Delta R^2 = .13, \Delta F(3, 78) = 4.35, p = .007$ ). To understand the interaction, we conducted simple slopes analysis (Aiken & West, 1991). Levels of average momentary positive emotions were not associated with life satisfaction for Asian Americans,  $B = .34, t(90) = 0.63, p = .530$ . In contrast, for European Americans, there was a significant positive association between average momentary positive emotions and life satisfaction,  $B = 1.80, t(90) = 3.09, p = .003$ . For Hispanic Americans, there was a marginally significant positive association between average momentary positive emotions and life satisfaction,  $B = 1.07, t(90) = 1.67, p = .096$ . In Step 3, levels of average momentary negative emotions were not associated with life satisfaction ( $\beta = .06$ ). However, there was a significant interaction between being Asian American and average momentary negative emotions ( $\beta = -.45$ ) ( $\Delta R^2 = .17, \Delta F(3, 75) = 7.11, p = .000$ ). Simple slopes analysis showed that for Asian Americans, momentary negative emotions were negatively associated with life satisfaction,  $B = -2.32, t(90) = -2.66, p = .009$ . However, average momentary negative emotions and life satisfaction were not associated for European Americans,  $B = 0.19, t(90) = 0.40, p = .690$ , and Hispanic Americans,  $B = -1.15, t(90) = -1.47, p = .146$ . While average momentary positive emotions remained to be a significant predictor ( $\beta = .66$ ), the interaction effect

**Table 2.** Means, standard deviations, and zero-order correlation coefficients of momentary positive emotions, momentary negative emotions, life satisfaction, and depressive symptoms.

	1	2	3	M (SD)
1. Positive emotions				
European Americans				2.47 <sub>a</sub> (0.42)
Hispanic Americans	–			2.78 <sub>a</sub> (0.45)
Asian Americans				2.41 <sub>b</sub> (0.71)
2. Negative emotions				
European Americans	–.11			1.72 <sub>a</sub> (0.48)
Hispanic Americans	.01	–		1.54 <sub>a</sub> (0.33)
Asian Americans	.31			1.71 <sub>a</sub> (0.46)
3. Life satisfaction				
European Americans	.53**	–.01		4.61 <sub>a</sub> (1.47)
Hispanic Americans	.41*	–.31	–	5.32 <sub>a</sub> (1.16)
Asian Americans	.13	–.54**		4.23 <sub>b</sub> (1.65)
4. Depressive symptoms				
European Americans	–.48**	.20	–.55**	8.74 <sub>a</sub> (8.18)
Hispanic Americans	–.25	.33	–.48*	5.96 <sub>a</sub> (6.67)
Asian Americans	–.11	.51**	–.70***	7.23 <sub>a</sub> (6.65)

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



between average momentary positive emotions and being Asian Americans did not remain significant in Step 3 ( $\beta = -.24$ ) (Figure 1(a))

### Average momentary emotions and depressive symptoms

The model was not significant in Step 1 ( $R^2 = .02$ ,  $\Delta F(2, 80) = 1.00$ ,  $p = .371$ ). In Step 2, average momentary positive emotions were negatively associated with depressive symptoms ( $\beta = -.68$ ). There was a significant interaction effect between being Asian Americans and average momentary positive emotions on depressive symptoms, ( $\beta = .42$ ) ( $\Delta R^2 = .12$ ,  $\Delta F(3, 77) = 3.71$ ,  $p = .015$ ). To decompose the interaction, we conducted simple slopes analysis. There was no association between average momentary positive emotions and depressive symptoms for Asian Americans,  $B = -1.17$ ,  $t(90) = -0.25$ ,  $p = .805$ . In contrast, there was a significant negative relationship between average momentary positive emotions and depressive symptoms for European Americans,  $B = -9.07$ ,  $t(90) = -15.53$ ,  $p < .001$  and for Hispanic Americans,  $B = -3.68$ ,  $t(90) = -5.77$ ,  $p < .001$ . In Step 3, average momentary negative emotions did not predict depressive symptoms ( $\beta = .15$ ). There was a marginally significant interaction effect between being Asian American and average momentary negative emotions ( $\beta = .23$ ), suggesting that association between average momentary negative emotions and depressive symptoms tended to be stronger for Asian Americans compared to other groups ( $\Delta R^2 = .13$ ,  $\Delta F(3, 74) = 4.28$ ,  $p = .008$ ). While average momentary

positive emotions continued to have a significant negative association with depressive symptoms ( $\beta = -.65$ ), the interaction between average momentary positive emotions and being Asian Americans did not remain significant in Step 3,  $\beta = .30$  (Figure 1(b)). See Table 3 for the summary of regression results.

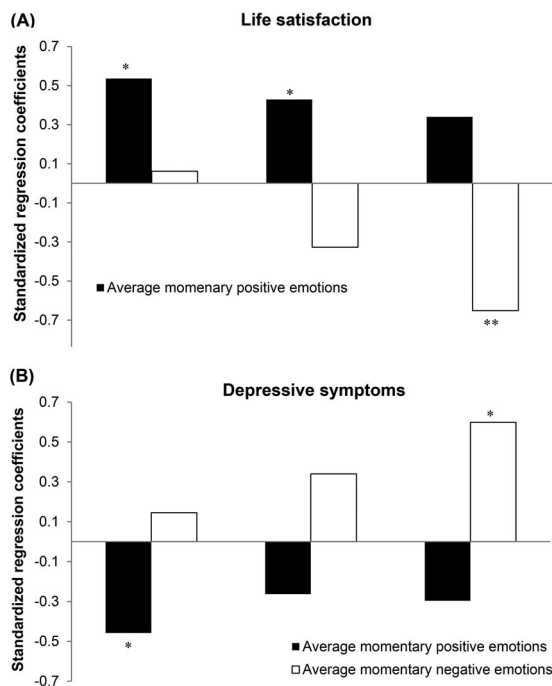
### Does acculturation make a difference?

We examined whether the patterns of relationship between average momentary emotions and well-being for Asian Americans change with acculturation to American culture. Considering that Hispanic Americans' cultural norms about positive emotions are similar to those of European American cultural context, this analysis was limited to Asian Americans. The regressions were run with average momentary positive and negative emotions, and acculturation level, and the interaction between acculturation level and average momentary positive/negative emotions as predictors for well-being measures (i.e. life satisfaction and depression). Acculturation level was not associated with life satisfaction,  $B = 0.61$ ,  $\beta = .25$ ,  $SE = 0.40$ ,  $t = 1.52$ ,  $p = .142$ . Average momentary positive emotions were positively associated with life satisfaction,  $B = 0.86$ ,  $\beta = .33$ ,  $SE = 0.40$ ,  $t = 2.18$ ,  $p = .040$ . The interaction effect of acculturation level and average momentary positive emotions was significant for life satisfaction,  $B = 1.54$ ,  $\beta = .39$ ,  $SE = 0.63$ ,  $t = 2.44$ ,  $p = .023$  ( $R^2 = .53$ ,  $F(5, 23) = 5.24$ ,  $p = .002$ ). The positive association between average momentary positive emotions and life satisfaction increased as levels of acculturation to American culture increased. As for depressive symptoms, none of the predictors were associated with depressive symptoms,  $|t|s < 1.61$ ,  $ps > .152$  ( $R^2 = .46$ ,  $F(5, 22) = 3.80$ ,  $p = .012$ ).<sup>3</sup>

### Discussion

Although to some degree, people across cultural contexts share the view that positive emotional experiences are desirable whereas negative emotional experiences are not (Tsai et al., 2006), the relative contribution of such experiences to overall well-being varies across different cultural contexts. The present study extends previous work on cultural differences in the relationship between emotions and well-being. Most notably, overcoming some of the prior studies' limitation of assessing emotion in ways that are more vulnerable to the effects of normative beliefs regarding emotions, we utilised the momentary sampling method that enabled us to capture reports of emotional experiences as they unfold in participants' daily lives. Our results suggest that cultural differences in the associations between emotions and well-being are not due to cultural biases in general or retrospective reports of these emotions. Instead, they indicate that positive emotions may truly matter more for well-being (or vice versa) in some cultural contexts relative to others.

Our findings indicate that the relative impact of positive and negative emotional experiences on well-being is



**Figure 1.** Standardised regression coefficients predicting life satisfaction (a) and depressive symptoms (b) with momentary positive and negative emotions as predictors. EA: European Americans; HA: Hispanic Americans; AA: Asian Americans. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 3.** Hierarchical multiple regression analyses predicting life satisfaction and depressive symptoms.

	Life satisfaction			Depressive symptoms		
	<i>B</i>	(SE)	<i>t</i>	<i>B</i>	(SE)	<i>t</i>
<i>Step 1</i>						
HA	0.70	(0.40)	1.78 <sup>†</sup>	-2.78	(1.98)	-1.41
AA	-0.39	(0.38)	-1.03	-1.46	(1.90)	-0.77
<i>Step 2</i>						
HA	0.35	(0.40)	0.88	-1.41	(2.03)	-0.69
AA	-0.42	(0.37)	-1.14	-1.19	(1.88)	-0.64
Momentary PE	1.80	(0.58)	3.09**	-9.07	(2.94)	-3.08**
HA × Momentary PE	-0.73	(0.86)	-0.85	5.39	(4.37)	1.23
AA × Momentary PE	-1.46	(0.71)	-2.06*	7.90	(3.60)	2.19*
<i>Step 3</i>						
HA	0.22	(0.38)	0.59	-0.38	(2.00)	-0.19
AA	-0.22	(0.33)	-0.65	-1.47	(1.78)	-0.83
Momentary PE	1.83	(0.53)	3.46**	-8.73	(2.79)	-3.12**
HA × Momentary PE	-0.72	(0.78)	-0.92	4.81	(4.13)	1.17
AA × Momentary PE	-0.95	(0.66)	-1.44	5.66	(3.47)	1.63
Momentary NE	0.19	(0.47)	0.41	2.47	(2.51)	0.99
HA × Momentary NE	-1.34	(0.92)	-1.46	4.41	(4.83)	0.91
AA × Momentary NE	-2.51	(0.71)	-3.52**	6.56	(3.90)	1.68 <sup>†</sup>

Note: HA: Hispanic Americans; AA: Asian Americans; PE: positive emotions; NE: negative emotions.

<sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ .

different across cultural groups. First, we showed that for those from cultural contexts that emphasise positive emotions (i.e. European Americans and Hispanic Americans), average momentary positive emotions had greater association with well-being than average momentary negative emotions. This pattern did not hold for Asian Americans whose cultural contexts deemphasise positive emotions. This result was consistent with previous studies examining the global measures of positive emotions and well-being (e.g. Leu et al., 2011; Suh et al., 1998). In addition, whereas more intense negative emotions at the experiential level showed a negative association with well-being for Asian Americans, they did not correspond to lower levels of well-being for European Americans and Hispanic Americans. The link between average momentary negative emotions and well-being in Asian Americans may be explained by the fact that East Asians have a greater tendency to pursue avoidance goals and focus on negative information in order to avoid negative outcomes (Lee, Aaker, & Gardner, 2000). Although some prior studies have shown significant negative associations between retrospectively reported negative emotions and well-being among Western participants (Suh et al., 1998), lack of replication is not surprising given differences in types of reports. Other momentary studies conducted in the Netherlands showed no associations between momentary negative emotions and indicators of well-being (e.g. depression, Peeters, Nicolson, Berkhof, Delespaul, & deVries, 2003). The null effect of average momentary negative emotions on well-being for non-Asian Americans in the present study may reflect the ways in which the emotions are measured.

Furthermore, considering that emotional processes are influenced by exposure to cultural contexts, from a brief exposure to priming (Perunovic, Heller, & Rafaeli, 2007) to stable cultural practices such as parental emotion

socialisation, we expected the acculturation to American culture to affect the pattern of the relationship between average momentary emotions and well-being for Asian Americans, a group whose cultural contexts differ from the mainstream European American culture in regard to emphasis placed on positivity. Indeed, our results demonstrated that for Asian Americans, the association between average momentary positive emotions and life satisfaction became stronger as the level of acculturation to American culture increased. This is in line with Leu et al.'s (2011) study showing that acculturated Asian Americans, compared to their immigrant Asian counterparts, were more similar to European Americans in the relationship between emotions and depressive symptoms. However, the association between average momentary negative emotions and depressive symptoms was not influenced by the acculturation level. If replicated, this finding might suggest that one can acculturate to a host culture in some ways while reflecting one's original culture in others. Perhaps negative emotions experienced in daily lives still serve as a critical cue for evaluations of depressive symptoms even among Asian Americans who acculturate to American culture.

### Limitations and conclusions

This study is not without limitations. One limitation of the present study is the correlational nature of the analyses. Although the sequential order in which the measures were collected provides tentative support for a causal interpretation, the associations between the average momentary emotions and well-being outcomes may not describe the causal link between the two. Another limitation of this study is that situations that led to emotional experiences were not taken into account. The positive and negative emotional experiences may have occurred in different types of situations, such as those involving



self or others. These situational features may have relevance for well-being depending on one's self-construal (Mesquita & Frijda, 1992). Momentary emotions may have been triggered by situations attributed to self, such as achieving or failing to achieve personal goals for some individuals, and by situations attributed to others, such as interpersonal closeness or conflict, for others. The present study has not examined situational variability, which may be systematically associated with cultural differences. Future studies that examine nuanced differences in situations may shed light on the underlying mechanisms of the link between emotional experience and well-being in different cultural contexts.

To summarise, our data suggest that the relative associations of average momentary experiences of positive and negative emotions with life satisfaction and depression differ depending on the cultural context. The assessment of momentary emotion in the study gives us insight into understanding the associations of the immediate emotional experiences rather than the generalised beliefs about emotions. Cultural contexts may differ in the role of emotions in supporting life satisfaction and preventing maladaptive patterns of emotional functioning such as depression. Alternatively, higher well-being may more readily translate into positive emotions or lack of negative emotions in some contexts rather than others. It is possible that in cultural contexts where positivity is emphasised and focused on, feeling positive in one's daily life is an important part of leading a satisfying life (and/or vice versa); whereas feeling negative in one's daily life does not impair the quality of life as much. On the contrary, in a cultural context where positive emotions are deemphasised, positive feelings may bear relatively little importance for well-being relative to other factors (and/or vice versa). In contrast, feeling negative emotions may signal less-than-satisfactory life and heightened levels of depression.

The present study suggests that benefits of positive emotions and costs of negative emotions for well-being should be considered with cultural norms in mind. In treatment or assessment of individuals with poor well-being, it might be useful to direct them to focus on enhancing experiences of positive emotions or decreasing experiences of negative emotions depending on the cultural contexts they are in. For example, knowing that momentary positive emotions are what matters for life satisfaction and depression levels for people from European American or Hispanic cultural contexts, a clinician might consider guiding clients to engage in daily activities that bring positive emotions, such as exercise, all the while directing those from East Asian cultural background to reduce negative emotions by effectively managing conflicts with others or reappraising stressful events. Future studies using clinical samples are needed to further clarify the relationship between momentary emotions and well-being in order to help develop culturally sensitive and effective interventions. This study is one step toward understanding the ways in which the levels of well-being

may be regulated by or regulate emotional experiences of different emotional valence depending on the cultural context.

## Notes

1. Russian Americans were recruited as another cultural group for this study. However, due to the limited sample size ( $n = 20$ ) Russian Americans were not included in the analyses for this paper. The present paper presents a partial data set from a larger study that assessed other measures.
2. European Americans were born in the US and had parents of Western European descent who were born and raised in the US. Asian Americans were born in the US or East Asian countries (China, Korea, and Japan), and had parents of East Asian descent who were born and raised in East Asian countries. Hispanic Americans were born in the US or in Central or South America and had parents of Hispanic descent who were born and raised in Central or South America. Asian American and Hispanic American participants were also selected based on their indication that they were proficient in their own native languages. The fluency level of native language was measured with ratings of speaking, writing, and understanding fluency (1 = "not at all" and 5 = "extremely well"). These ratings were high,  $M = 4.16$  ( $SD = 0.91$ ) for Asian Americans and  $M = 4.72$  ( $SD = 0.52$ ) for Hispanic Americans. See Table 1 for demographics.
3. We conducted the same analysis that examined the moderating effect of acculturation level using GEQ-E scores for both Hispanic Americans and Asian Americans. The model was not significant for Hispanic Americans for life satisfaction,  $R^2 = .34$ ,  $F(5, 18) = 1.87$ ,  $p = .150$ , and depressive symptoms,  $R^2 = .27$ ,  $F(5, 18) = 1.33$ ,  $p = .297$ . As for Asian Americans, similar results from the previous analysis using GEQ-A were observed. There was a significant interaction between GEQ-E and average momentary positive emotions,  $B = -1.41$ ,  $\beta = -0.37$ ,  $SE = 0.61$ ,  $t = -2.31$ ,  $p = .030$ , indicating that the positive relationship between average momentary positive emotions and life satisfaction becomes weaker as GEQ-E score increases.

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