**Emotionally Expressive Interdependence in Latin America:
Triangulating Through a Comparison of Three Cultural Regions**

Cristina E. Salvador¹

Sandra Idrovo Carlier²

Keiko Ishii³

Carolina Torres Castillo²

Kevin Nanakdewa⁴

Alvaro San Martin⁵

Krishna Savani^{6,7}

Shinobu Kitayama⁸

¹Duke University, ²Universidad de La Sabana, ³Nagoya University, ⁴University of Toronto, ⁵IESE Business School, and ⁶Nanyang Technological University, ⁷The Hong Kong Polytechnic University, ⁸University of Michigan

Author Note: This research was supported by a National Science Foundation Grant, 1917727 and a Rackham International Research Fellowship (to CES). Correspondence about this paper should be addressed to Cristina E. Salvador, Department of Psychology and Neuroscience, Duke University, 417 Chapel Drive, Box 90086, Durham, NC 27708, Email: cristina.salvador@duke.edu.

Note: This is a preprint is currently under review and may differ from the final published version of the paper.

Abstract

Theories in cultural psychology assume that emotions disrupt social harmony, and thus, emotion moderation is a hallmark of interdependence. However, this assumption is based exclusively on research on East Asians. Here, we tested the hypothesis that Latin Americans are as interdependent as East Asians and more so than European Americans. However, Latin Americans are emotionally expressive since this expressivity is instrumental in achieving interdependence in Latin American (but not East Asian) contexts. To examine these possibilities, Study 1 tested Chileans and Mexicans, whereas Study 2 tested Colombians. We compared the Latin American groups with European Americans (Study 1) or European Americans and Japanese (Study 2). Participants reported how strongly they would express various emotions in different social contexts. As predicted, like European Americans, Latin Americans reported expressing their emotions more than Japanese. However, unlike European Americans but like Japanese, Latin Americans expressed emotions that promote interdependence (socially engaging emotions) more than those that promote independence (socially disengaging emotions). Notably, Latin Americans showed the engagement effect in emotional expression only for positive emotions, but Japanese showed it only for negative emotions. In addition, we also administered tasks designed to assess holistic cognition, a marker of interdependence, and found both Latin Americans and Japanese to be more holistic than European Americans. An explicit attitudinal measure of interdependence showed an anomalous cross-cultural pattern. We conclude that Latin Americans have an expressive form of interdependence and discuss implications for theories in cultural psychology.

Keywords: culture; interdependence; emotions; engaging; disengaging; Latin America

Word count: 239 words

Emotionally Expressive Interdependence in Latin America: Triangulating Through a Comparison of Three Cultural Regions

Despite being the most populous region in the Americas, with over 641 million people, Latin America and the Caribbean are understudied in the psychology literature (Arnett, 2008; Henrich et al., 2010). In the present work, we addressed this gap by hypothesizing that Latin Americans utilize emotional expression to connect with others and form interdependent social relations. Our hypothesis would imply that Latin Americans should be particularly expressive of the emotions that promote interdependence with others, called the socially engaging rather than disengaging emotions (Kitayama et al., 2000; Kitayama, Mesquita, et al., 2006; Kitayama et al., 2009). This pattern is in stark contrast with European Americans, whose expressiveness is likely tied to their independence rather than interdependence (Chentsova-Dutton & Tsai, 2010). In addition, although East Asians are as interdependent as Latin Americans, they regard strong emotions as a hindrance to group harmony (Tsai et al., 2007). They may therefore moderate their emotions to promote interdependence (Kraus & Kitayama, 2019).

To examine these possibilities, we compared emotional expressivity of three Latin American groups (Chileans and Mexicans in Study 1, and Colombians in Study 2) with European Americans (both Studies 1 and 2) and one East Asian group (Japanese, Study 2). Moreover, to obtain independent evidence that Latin Americans are as interdependent as Japanese and more so than European Americans, we tested multiple tasks designed to assess holistic cognition, with the prediction that both East Asians and Latin Americans are more cognitively holistic than European Americans.

Moderation of Emotions and Interdependence in East Asia

A growing body of evidence suggests that East Asians are interdependent, cognitively holistic, and emotionally restrained. First, large cross-cultural surveys have indicated that East Asian societies are high on collectivism, the value orientation prioritizing group over individual

(Hofstede, 1980). This value orientation may be linked to practices and meanings of the region, or its culture, that promotes the self's interdependence with others. Consistent with this analysis, East Asians show various implicit psychological tendencies attuned to others, thereby promoting the interdependent self. For example, they are as motivated to earn a prize for close others as for themselves (Kitayama & Park, 2014). Compared to European Americans who justify their own personal choices, Japanese justify choices they make in the scrutiny of others (Kitayama et al., 2004). East Asians are also more focused on improving the self and adjusting to social expectations to fit in, rather than having an overly positive view of the self (Heine et al., 1999; Tsai et al., 2007; Weisz et al., 1984).

Second, interdependence has a robust cognitive correlate. People who are interdependent need to be cognitively attuned to others, norms, and social contexts in order to adjust their behaviors and fit in (Markus & Kitayama, 1991). Consequently, interdependence is linked closely to holistic (vs. analytic) cognitive styles (Varnum et al., 2010). Consistent with this analysis, the existing evidence shows that East Asians are more cognitively holistic than European Americans (Nisbett et al., 2001). For example, East Asians find it more difficult to ignore context when attending to a focal object, compared to European Americans (Kitayama et al., 2003). Furthermore, compared to European Americans, East Asians are more likely to consider various alternative possibilities when deciding the future outcomes (e.g., two people that are best friends now may not necessarily be friends in the future) (Ji et al., 2001).

Third, interdependence also has an emotional correlate. In East Asian cultures, people try to adjust their behaviors to one another and to social norms to maintain interdependent social relations (Weisz et al., 1984). Since strong, high-arousal emotions, such as excitement and enthusiasm, are thought to hinder the effort for social adjustment and fitting into social relations, East Asians tend to value these emotions less (Tsai et al., 2007). Moreover, East Asians, especially those who are interdependently oriented, are both willing and able to downregulate their emotional arousal (Kraus & Kitayama, 2019; Murata et al., 2013; Soto et al.,

2016). For example, Kraus and Kitayama (2019) asked East Asian and European American participants to view a series of unpleasant and neutral images and found that East Asians were more capable of reducing physiological emotional arousal when asked to do so, compared to European Americans (Kraus & Kitayama, 2019). In short, the evidence suggests that both holistic cognition and emotional restraint support East Asians' interdependent orientations.

Expressive Interdependence in Latin America

The extant evidence suggests that Latin Americans are likely to be interdependent. First, using cultural values as an index, scholars have shown that Latin American countries are highly collectivistic rather than individualistic (Hofstede, 1980). Numerous studies have documented that Latin American groups place a strong value on family and social obligations, thereby forming an organized set of practices and meanings (or culture) that emphasizes the self's interdependence with others (Fuligni et al., 1999; Sabogal et al., 1987; Telzer et al., 2010). Consistent with the hypothesis that Latin Americans are collectivistic and interdependent, recent work shows that Brazilians are as cognitively holistic as Chinese, and more so than European Americans (de Oliveira & Nisbett, 2017). For example, Brazilians are more likely to think dialectically and expect linear trajectories (e.g., someone consistently winning a chess match) to reverse rather than stay their course.

Interdependence and holistic cognition coexist with emotional restraint in East Asia. From this pattern, we may expect Latin Americans to be also emotionally restrained. Curiously, however, evidence suggests the opposite. Latin Americans, including Americans of Latin American heritage (Latinx), are highly emotional. First, Latin Americans reportedly experience emotions more strongly than East Asians (Soto et al., 2005), particularly positive emotions (De Almeida & Uchida, 2018). When the subjective valuation of various emotions is tested, Latin Americans are like European Americans and value high-arousal emotions more strongly than East Asians do (Ruby et al., 2012; Tsai et al., 2016). Moreover, unlike East Asians, Latin Americans do not readily down-regulate their physiological emotional arousal when asked to do

so. Instead, they are capable of increasing their physiological emotional arousal when asked (Hampton et al., 2019). In this respect, again, they are like European Americans. Lastly, people in Latin American countries show high levels of emotional expressivity (Niedenthal et al., 2019; Rychlowska et al., 2015; Wood et al., 2016).

Taken together, the emerging body of work on Latin Americans seems at odds with the corresponding literature based on East Asians. Even though both groups are demonstrably interdependent and cognitively holistic, they vary diametrically in the domain of emotion and emotion expression, calling for a theoretical resolution that sheds light on why and how East Asians and Latin Americans are so different in emotion even though they are similarly interdependent and cognitively holistic.

To address this issue, we propose that East Asians and Latin Americans use very different emotion-related strategies to achieve the goals of interdependence. As noted above, the extant analysis suggests that East Asians moderate and possibly suppress their emotions to adjust the self to social expectations and thus to fit in (Tsai et al., 2007; Weisz et al., 1984). In stark contrast, we hypothesize that Latin Americans achieve their interdependent goals by being emotionally expressive. This hypothesis is consistent with the notion of *simpatía*, an interpersonal orientation characterized by being amicable and warm, which can be accomplished in many ways, including the expression of positive emotions (Acevedo et al., 2020; Campos & Kim, 2017; Holloway et al., 2009; Triandis et al., 1984). Thus, feeling strong emotions can be congruous with interdependence in Latin American contexts.

Table 1 summarizes our analysis of three cultural regions. (i) East Asians are interdependent and cognitively holistic. Moreover, they express emotions *less* to “stand-in” or fit into social relations and promote the desired state of interdependence. (ii) European Americans are independent and analytic (i.e., non-holistic) in cognition. Moreover, European Americans express emotions more to show their personal feelings and autonomy or promote the independent self. (iii) Latin Americans are interdependent and cognitively holistic. In these two

respects, they are like East Asians, rather than European Americans. However, unlike East Asians, Latin Americans express emotions *more* to achieve resonance (Ondish et al., 2019) and social connection, or interdependence. In this regard, they are different from European Americans (who express emotions to show their inner passion and thus independence). To systematically test these hypotheses, we have focused on the social functions of emotions.

Table 1.

Summary of hypotheses tested in the present work

Cultural region	Overarching Ethos	Interdependence indexed by holistic cognition	Emotional expression	Expression of engaging (vs. disengaging) emotions
East Asians	Collectivism and Interdependence	Holistic	Less expressive	Socially engaging emotions expressed more
European Americans	Individualism and Independence	Analytic	More expressive	Socially disengaging emotions expressed more
Latin Americans	Collectivism and Interdependence	Holistic	More expressive	Socially engaging emotions expressed more

The Social Orientation Dimension of Emotions

Emotions have been conceptualized in various ways by biologists (Darwin, 1972), psychologists (Ekman et al., 1969; Ellsworth, 2013; Russell & Barrett, 1999), and anthropologists (Lutz & White, 1986). While there is debate about the exact nature of emotions and how they arise, scholars agree that emotions have various interpersonal and social functions (Cowen & Keltner, 2017; Keltner & Haidt, 1999). Of importance to the present work, prior work shows that emotions vary in the extent to which they promote the goals of either interdependence or independence (Kitayama et al., 2000; Kitayama, Mesquita, et al., 2006).

Some emotions are related to the goals of interdependence. When interdependent goal states, such as social harmony and social connection, are achieved, specific positive emotions, such as friendly feelings and the feeling of respect, will come about. Conversely, when such goal states are disrupted, motivating the person to restore the desired states of

interdependence, specific negative emotions, such as guilt and the feeling of indebtedness, will arise. These emotions are called socially engaging since they promote social engagement and thus interdependence (Kitayama, Mesquita, et al., 2006). Conversely, some other emotions are related to the goals of independence. When independent goal states, such as gaining wealth and success in specific tasks, are achieved, emotions, such as pride or self-esteem, will arise. Conversely, when such goal states are blocked, thereby motivating the person to restore the sense of independence, certain negative emotions, such as anger and frustration, will be experienced. These emotions are called socially disengaging since they promote the sense of the self as disengaged from social relations and thus independent. Previous work shows that the four clusters of emotions (defined by valence [positive vs. negative] and social engagement [engaging vs. disengaging]) are clearly differentiated when their psychological distance is analyzed with a multidimensional scaling method (Kitayama et al., 2000; Uchida & Kitayama, 2009). Moreover, each cluster (e.g., pride and the feeling of self-esteem for positive disengaging emotions) shows a sufficient reliability (Na et al., 2019).

In the current work, we asked participants to report how strongly they would express emotions that vary in both valence and social orientation across various social settings. Interdependent orientations are revealed in a stronger tendency to express socially engaging emotions more than socially disengaging emotions. Hence, we predicted that both East Asians and Latin Americans should show this pattern. The opposite should be the case for European Americans, a more independent group. European Americans should express disengaging emotions (indexing one's independence) more than engaging emotions (indexing one's interdependence). These predictions are summarized in the right-most column of Table 1.

At the same time, our analysis implies that Latin Americans promote their interdependence through the expression of emotions, particularly, socially engaging emotions. In stark contrast, East Asians promote their interdependence through emotional moderation or even suppression. It would follow that even though both two groups would express engaging

emotions more than disengaging emotions, they will differ markedly in the absolute level of emotional expression, with Latin Americans being more emotionally expressive than East Asians. In this respect, Latin Americans should be similar to European Americans, even though the two groups differ in the cultural reasons for the expression of emotions: Whereas for Latin Americans, emotional expression is a vehicle for the self's interdependence with others, for European Americans it is an index of the self's independence from others.

In addition to their social orientation, emotions vary in valence. It would seem plausible that across all cultural groups, positive emotions are more desirable (Tsai et al., 2006) and thus likely to be expressed. However, some cultural groups are known for their positivity. For example, Latin Americans value *simpatía*, an interpersonal orientation characterized by being amicable and warm, which can be accomplished in many ways, including the expression of positive emotions (Acevedo et al., 2020; Campos & Kim, 2017; Holloway et al., 2009; Triandis et al., 1984). Moreover, European Americans are also known for strong positivity biases in both evaluation of the self (Heine et al., 1999) and emotional experience (Kitayama et al., 2000). In contrast, East Asians are often self-effacing and even self-critical (Heine et al., 1999; Kitayama et al., 1997; Salvador et al., 2021). Hence, East Asians might express negative emotions more strongly than both Latin Americans and European Americans.

In sum, we expected that cultures would vary in both the absolute level of emotional expressivity and the types of emotions expressed, as outlined in Table 1. First, Latin Americans and European Americans will be more expressive of emotions than East Asians. Second, insofar as both Latin Americans and East Asians are interdependent, they will express socially engaging emotions more than socially disengaging emotions. European Americans, a more independent cultural group, will show the opposite pattern and express socially disengaging emotions more than socially engaging emotions. Finally, positive emotions will be expressed more than negative emotions since they are more desirable. However, this effect will be more

pronounced for Latin Americans and European Americans than for East Asians, who are generally more self-critical.

Present Research

To test our predictions, we examined the reported levels of expression for emotions that vary in both social engagement (engaging vs. disengaging) and valence (positive vs. negative) among Latin Americans in three different countries (Chileans and Mexicans in Study 1 and Colombians in Study 2) and compared them with European Americans in Study 1 and both European Americans and Japanese in Study 2. In addition, we sought independent evidence that the three cultural groups differ from each other in interdependence by using measures of holistic cognition. We expected that East Asians and Latin Americans would be more holistic in cognition than European Americans because they are more interdependent than the latter group.

Study 1

In Study 1, we compared people from two Latin American countries (Chile and Mexico) with European Americans in the United States to test the hypothesis that even though both of these two cultural groups are emotionally expressive to a roughly equal extent, they express emotions for different reasons. Whereas Latin Americans express emotions to connect with others (thus, promoting interdependence), European Americans do so to show their inner passion (thus, promoting independence). We therefore expected that Latin Americans would report expressing socially engaging emotions more than socially disengaging emotions, but European Americans would report expressing socially disengaging emotions expressed more than socially engaging emotions. In addition, we tested holistic cognition. Since holistic cognition is linked to interdependence, we predicted that Latin Americans would be more cognitively holistic than European Americans.

Methods

Participants

We set a target sample size of 200 participants per cultural group. This sample size approximately doubled the typical sample size of prior cross-cultural work using similar tasks (Kitayama et al., 2009; San Martin et al., 2018). All participants were adults recruited from an online platform, Prolific Academic. Out of the total of 615 participants, 17 were excluded prior to analyses for failing to report any demographics (e.g., cultural background) (7), not completing some or all the measures of interest (3), and not meeting ethnicity or residence criteria (7). This left us with 198 European Americans (73 men, 123 women, 2 other), 197 Mexicans (132 men, 62 women, 3 other), and 203 Chileans (159 men, 69 women, 5 other). All were adults, with European Americans being on average the oldest ($M = 37.42$, $SD = 14.28$), followed by Mexicans ($M = 26.49$, $SD = 7.66$) and Chileans ($M = 24.48$, $SD = 5.00$). The age range was quite wide, especially in the European American group. We addressed this potential confound by using age as a covariate in a subsidiary analysis, which did not change any substantive results (see Supplemental Information). There were no systematic differences across groups in terms of the region they grew up in and socio-economic status (see Supplemental Information). The study met ethics requirements in accordance with the Declaration of Helsinki and was approved by the Institutional Review Board of the University of Michigan.

Materials

All materials were originally developed in English and translated into Spanish. Back-translation was used to ensure the equivalence of meaning. In the present work, we focused on two measures, which were representative of emotional expression and holistic cognition.

Expression of engaging vs. disengaging emotions. Participants reported how strongly they would express, in both bodily gestures and facial expressions, each of twelve emotions on a 6-point scale (1 = not at all and 6 = very strongly) in each of four social situations, i.e., when something either good or bad happened to either the self or their friends/family. The 12 emotions were sampled from earlier work (Kitayama et al., 2000; Kitayama et al., 2009; San Martin et al., 2018). Specifically, Kitayama et al. (2000) tested a larger set of emotion terms and

performed multi-dimensional scaling on experience ratings of these emotions. They found four distinct clusters defined by valence and engagement. For our current work, we used the same 12 terms as San Martin et al. (2018), which include a few in each of the four quadrants¹ in addition to three general positive emotions (i.e., elated, happy and calm) and one negative emotion (unhappy). We computed scores for positive and negative socially disengaging (e.g., pride and frustration) and engaging (e.g., friendly feelings and shame) emotions separately for both positively-valenced and negatively-valenced situations following San Martin et al., (2018). This is because we expected positive situations to elicit primarily positive emotions and negative situations to elicit negative emotions. Then, we averaged across the situations to have a single score for each of the four types of emotions of interest (positive engaging, positive disengaging, negative engaging and negative disengaging). Table 2 shows the 8 emotion terms of interest and the reliability of expressivity ratings in each of the four types of emotions.

Table 2.

Emotion terms and Reliabilities for the emotional expression ISOQ used in the present work.

				Reliability (α)					
				Study 1			Study 2		
Valence	Emotion Engagement	Emotion Terms	Reliability Type	Chile	Mexico	US	Colombia	US	Japan
Positive	Engaging	friendly feelings; feelings of closeness to others	Situation	0.78	0.75	0.71	0.75	0.76	0.80
			Emotion	0.69	0.72	0.70	0.80	0.77	0.80
	Disengaging	pride; self-esteem	Situation	0.60	0.66	0.74	0.71	0.65	0.70
			Emotion	0.57	0.71	0.75	0.64	0.69	0.72
Negative	Engaging	guilt; shame	Situation	0.62	0.69	0.74	0.63	0.67	0.66
			Emotion	0.55	0.57	0.73	0.64	0.69	0.60
	Disengaging	anger; frustration	Situation	0.59	0.72	0.67	0.69	0.70	0.63
			Emotion	0.71	0.70	0.71	0.73	0.80	0.63

¹ Some of the terms (“friendly feelings” or “self-esteem”) are not acknowledged as emotion in certain versions of emotion theory, including the basic emotion theory (Ekman & Cordaro, 2011). However, emotions can be conceptualized as cognitive elaborations or “constructions” based on both primary affective states defined by arousal and valence and social contexts, including social relations (Lindquist, 2013). Given this broader, “constructionist” view of emotion, there is no sharp boundary to be drawn between the so-called basic emotions, such as joy and pride, and other states such as “friendly feelings,” even though the former are more often recognized as prototypical as emotions than the latter (Shaver et al., 1987).

The reliabilities were calculated both across situations and across emotion terms. First, we averaged the relevant emotion terms for each situation and then computed reliabilities across these situations. Second, we averaged the ratings for each emotion across the four situations and then computed the reliabilities across the terms in each emotion category. Regardless of how reliabilities were computed, as in prior work by Kitayama et al. (2006), the reliabilities for the positive or negative, engaging or disengaging emotions were largely adequate in all the three groups in each study. When the reliability was less than .6 in one analysis, the corresponding reliability was satisfactory in the other analysis.

Holistic cognition: Trend reversal task. To assess holistic cognition, we followed prior work conducted in Brazil (de Oliveira & Nisbett, 2017) and adopted a trend reversal task. The trend reversal task examines the extent to which reasoning is more circular or cyclical (Ji et al., 2001). Participants were presented with four different scenarios that describe the current state. For example, they were told that “*Steve and Jeff are both seniors at the same university. They have been very close friends for all four years during college*”. Then, they were asked how likely a change would be to occur (e.g., How likely is it that they will stop being friends after graduation?). A higher percent likelihood of change would indicate more holistic thinking.

Procedure

Participants completed the study online via Qualtrics. Prior to participation, participants were screened through Prolific to have a high approval rating for online studies (95% or greater) and be fluent in the language they were tested in (English for European Americans and Spanish for Mexicans and Chileans). All participants were screened to be born, currently residing in their respective countries, and were citizens of the respective countries. European Americans were screened to be White/Caucasians with non-Hispanic ancestry.

After filling out the informed consent, participants performed both the trend reversal task and the emotion expression task. They also responded to demographic questions, including how urban or rural the place they lived is and subjective social status (see Supplementary

Information for details).² After all the tasks, participants were debriefed and compensated \$1.20 for their time. These studies were not formally pre-registered. Data and code are made available after publication.

Results

Emotional expression

We submitted the mean expressivity ratings to a 3 (Country: Chile, Mexico, or US; between-participant) x 2 (Emotion Valence: Positive or Negative; within-participant) x 2 (Emotion Engagement: Engaging or Disengaging; within-participant) mixed ANOVA³.

Table 3.
Predictors of variation in emotional expression

Variable	<i>F</i>	<i>df</i>	<i>p</i>	η^2p
Country	8.43	2	<.001	0.03
Emotion Valence	878.79	1.00	<.001	0.60
Emotion Engagement	31.91	1.00	<.001	0.05
Emotion Valence * Country	0.42	2.00	0.66	0.00
Emotion Engagement * Country	22.98	2.00	<.001	0.07
Emotion Valence * Emotion Engagement	820.83	1.00	<.001	0.58
Emotion Valence * Emotion Engagement * Country	8.23	2.00	<.001	0.03
Error		595.00		

As summarized in Table 3, all main effects and interactions were significant. Thus, to make sense of the pattern, we start with the highest-order interaction (Emotion Valence x Emotion Engagement x Country). As can be seen in Figure 1, the 3-way interaction occurs because the Emotion Engagement x Country interaction took somewhat different forms, depending on Emotion Valence. The Emotion Engagement x Country interaction was significant for both positive emotions and negative emotions, $F(2, 595) = 22.47$, $p < .001$, $\eta^2p = .070$ and

² They also performed another task called the twenty-statements task, which was included for another purpose outside the scope of the present study and will not be reported here.

³ In a separate ANOVA we also included Gender as an additional independent variable. There were no significant main effects nor interactions between Gender and other variables (see SI).

$F(2, 595) = 3.24, p = .040, \eta^2 p = .011$, respectively. However, the interaction pattern was much stronger for positive emotions than for negative emotions.

Figure 1.

Emotion Valence x Emotion Engagement x Country interaction among Chileans, Mexicans, and Americans.

To start with positive emotions, engaging emotions were expressed more than disengaging emotions in all three countries as shown by positive difference scores and confidence intervals that do not include zero ($M_{diff} = .86, 95\% CI = [.76, .96]$, $M_{diff} = .70, 95\% CI = [.60, .80]$, and $M_{diff} = .38, 95\% CI = [.28, .48]$, for Chileans, Mexicans, and European Americans, respectively). However, this difference was significantly larger for the two Latin American groups than for European Americans, $ps < .001$. The two Latin American groups did not differ from each other, $p = .50$. The difference was due primarily to the expression of positive engaging emotions, as shown by a strong main effect of Country for these emotions, $F(2, 595) = 12.92, p < .001, \eta^2 p = .042$. The two Latin American groups expressed positive engaging emotions more strongly than European Americans. There was no comparable difference between countries for positive disengaging emotions, $F(2, 595) = 1.41, p = .25, \eta^2 p = .005$.

Regarding negative emotions, disengaging emotions were expressed more than engaging emotions in all the three countries as shown by negative difference score values and 95% confidence intervals that do not overlap with zero ($M_{diff} = -.36$, 95% $CI = [-.44, -.28]$, $M_{diff} = -.47$, 95% $CI = [-.55, -.39]$, and $M_{diff} = -.49$, 95% $CI = [-.57, -.41]$, for Chileans, Mexicans, and European Americans, respectively). However, this difference was significantly less for Chileans and Mexicans than European Americans, $ps = .019$ and $.045$. There was no difference between Mexicans and European Americans, $p = .73$.

The remaining effects must be understood within the pattern shown in Figure 1. To begin with, two of the three significant 2-way interactions (Country x Engagement and Emotion Valence x Engagement) proved significant. The Country x Engagement interaction shows that when the valence is collapsed, Latin Americans reported expressing socially engaging emotions more than socially disengaging emotions ($M_{diff} = .25$, 95% $CI = [.19, .31]$ and $M_{diff} = .11$, 95% $CI = [.05, .18]$, for Chileans and Mexicans, respectively), but European Americans showed a reversal, reporting expressing disengaging emotions more than engaging emotions albeit non-significantly ($M_{diff} = -.05$, 95% $CI = [-.12, .10]$).

However, the cultural difference in the tendency to report expressing engaging (rather than disengaging) emotions was more pronounced for positive than for negative emotions, resulting in the significant 3-way interaction. Moreover, the Emotion Valence x Emotion Engagement interaction shows that people reported expressing positive socially engaging emotions more than the remaining three emotions. This pattern is especially pronounced for the two Latin American countries than in the U.S., resulting in the significant 3-way interaction.

The three main effects are also worthy of note. First, the Country main effect shows that the two Latin American groups are more expressive than European Americans ($Ms = 3.03$, 3.06 , and 2.86), $ps < .001$. The two Latin American groups did not significantly differ from one another, $p = .58$. This effect of Country was particularly pronounced for positive engaging emotions, as suggested by the interactions discussed above. The Emotion Valence and

Emotion Engagement main effects show that positive (vs. negative) emotions and engaging (vs. disengaging) emotions were expressed more. Importantly, as indicated above, each of these main effects was qualified by higher order interactions.

Trend reversal task

When the mean percent likelihood of change (an index of holistic cognition) was analyzed in a one-way ANOVA, a highly significant main effect of Country emerged, $F(2, 595) = 50.11, p < .001, \eta^2p = .144$. The estimated likelihood of change was significantly higher for Chileans and Mexicans than for European Americans ($M = 41.43, 39.97$ and $30.50, SE = .84, .84$ and $.83$, for Chileans, Mexicans, and European Americans), $ps < .001$. Mexicans and Chileans did not significantly differ from each other, $p = .217$.

Discussion

Study 1 provided the first evidence for expressive interdependence among Latin Americans. Regarding the positive emotions, both Chileans and Mexicans reported expressing socially engaging emotions more than their disengaging counterparts, and further, this effect of Emotion Engagement was significantly less for European Americans. As for the negative emotions, disengaging emotions were expressed more than engaging emotions. However, this effect was weaker for Latin Americans than for European Americans. Once we collapsed across emotion valence, Latin Americans expressed engaging emotions more than disengaging emotions, consistent with the prior evidence that Latin American culture is interdependent. In contrast, European Americans did not show this effect. In fact, they were somewhat more expressive of disengaging (vs. engaging) emotions. The European American pattern is consistent with prior work on emotional experience showing that European Americans report experiencing disengaging emotions significantly more than engaging emotions (Kitayama, Mesquita, et al., 2006; Kitayama et al., 2009). In combination, the available evidence is consistent with the hypothesis that European Americans are independent.

Of note, Latin Americans' tendency to express engaging emotions more than disengaging emotions was particularly pronounced for positive emotions. This pattern is consistent with the prior suggestion that Latin Americans emphasize positivity (Campos & Kim, 2017). Our unique contribution is to show that this emphasis on positivity is evident in emotion expression and found only in the emotions that promote interdependence (i.e., socially engaging emotions). Our findings are consistent with suggestions that Latin Americans are "convivial" or amicable (Acevedo et al., 2020; Campos & Kim, 2017).

If Latin Americans are more interdependent than European Americans, they may be expected to be more holistic in cognition, insofar as interdependence is tied to holistic cognition (Varnum et al., 2010). Consistent with this reasoning, we found that Chileans and Mexicans were cognitively more holistic than European Americans. This finding extends the early evidence by de Oliveira and Nisbett (2017) in Brazil to both Chile and Mexico.

Study 2

Although Study 1 provided initial evidence for expressive interdependence in Latin America, it did not have any East Asian group, thereby falling short in testing the hypothesis that while Latin Americans are as interdependent as East Asians, the emotional strategies to attain interdependence are different between these two cultures. To address this issue, Study 2 aimed to directly compare Latin Americans and East Asians. As an East Asian group, we tested Japanese. Further, to assess the generality of the Latin American pattern, we tested people from a third Latin American country, Colombia, while adding a new European American sample for comparison purposes.

We had two primary predictions summarized in Table 1. First, we hypothesized that both Colombians and Japanese are more interdependent. We thus predicted that both groups would express engaging emotions more than disengaging emotions. Moreover, we expected to replicate Study 1 and find Colombians to show this effect particularly strongly for positive emotions. We were agnostic about the potential valence effect among Japanese although the

emphasis on positivity is unlikely for them given prior evidence showing their propensity toward self-criticism (Heine et al., 1999; Kitayama et al., 1997). Further, we also hypothesized that unlike Colombians and Japanese, European Americans are independent. We thus predicted that this cultural group would express disengaging emotions more than engaging emotions. Second, we also hypothesized that Latin Americans achieve interdependence by expressing emotions, whereas Japanese do so by moderating emotional expression. In addition, European Americans are thought to express emotions to show their independent selves. We thus predicted that when both emotions' valence and engagement were collapsed, both Latin Americans and European Americans would be emotionally more expressive than Japanese.

In combination, we anticipated that while Latin Americans and European Americans would be similarly expressive of their emotions, they would differ in the types of emotions that are expressed. Latin Americans should express engaging emotions (especially the ones that are positive) more than disengaging emotions, but European Americans should express disengaging emotions more than engaging emotions. Moreover, Latin Americans and Japanese are similar in terms of the type of emotions they express more (i.e., engaging emotions), but they differ in the overall level of emotional expression, with Latin Americans being more expressive overall than Japanese. Finally, since both Latin Americans and Japanese are interdependent, they should be cognitively holistic. We thus anticipated that cognition would be more holistic for these two cultural groups than for European Americans. To further test this prediction, we used additional cognitive tasks.

As a secondary aim, we included an explicit attitudinal index of independent vs. interdependent self-construal. We included this measure since explicit scales have been widely used in cross-cultural comparisons (Oyserman et al., 2002), and most recently have been used to suggest that Latin Americans are independent (Krys et al., 2022). Based on prior work that explicit measures of self-construal rarely show systematic cultural variation (Heine et al., 2002; Kitayama, 2002; Kitayama et al., 2009; Peng et al., 1997; San Martin et al., 2018), we

anticipated that self-construal would be unlikely to converge with the implicit measures (i.e., emotion expression and holistic cognition). We predicted no systematic differences between Latin Americans, East Asians, and European Americans.

Methods

Participants

As in Study 1, we set the target sample size of 200, or as many participants we can recruit until the end of the semester in all three locations. We recruited 204 European Americans (98 male, 106 female), 175 Colombians (69 male, 106 female), and 178 Japanese (69 male, 109 female) college undergraduates. They were recruited at the University of Michigan (USA), Universidad de La Sabana (Colombia), and Nagoya University (Japan). The European American sample was on average the youngest ($M = 18.69$, $SD = 0.99$), followed by the Japanese sample ($M = 20.04$, $SD = 1.24$) and the Colombian sample ($M = 20.60$, $SD = 2.92$). As in Study 1, there were no systematic differences across groups in terms of the region they grew up in and socio-economic status (see Supplemental Information). Further, additional analysis with age included as a covariate did not change the results (also see Supplemental Information). The study was overseen by the Institutional Review Board of the University of Michigan, met ethics requirements of all the three countries in accordance with the Declaration of Helsinki.

Materials

All materials were originally developed in English. They were translated into Japanese and Spanish. Back-translation was used to ensure the equivalence of meaning. In the present work, we focused on the analysis of five tasks,⁴ including the emotional expression task, three

⁴ Study 2 is as part of a larger study, as such eight additional tasks were interspersed across the tasks of primary interest. These tasks were unrelated to emotional expression and holistic cognition. They included pre-tests to develop materials for future studies and tasks for separate projects. The current study is the first to report the emotional expression and holistic cognition results using this data.

measures of holistic cognition (dialectical reasoning, holistic social cognition and general holism), and an explicit measure of self-construal.

Emotion expression. We assessed the degree to which people would express emotions varying in both valence and engagement with the same task and analytic procedure described in Study 1. As in Study 1, the reliabilities for the four relevant clusters of emotions were adequate in all three groups (see Table 2).

Holistic cognition 1. Trend reversal task. We adopted three tasks to assess holistic cognition. To assess dialectical thinking, we adopted the trend reversal task (Ji et al., 2001) described in Study 1.

Holistic cognition 2. Social attribution. To assess *holistic social attribution*, we used the attribution questionnaire from Kitayama et al. (2009). Participants were given four scenarios, each of which described a target person who behaved in a socially desirable or undesirable fashion. After participants read each of the scenarios, they rated the extent to which the behavior reflected the protagonist's dispositional attributes (e.g., attitudes and personality) and the social context (e.g., norms and atmosphere) by indicating their agreement on a 7-point scale (1 = strongly disagree, 7 = strongly agree). The main dependent variable was the difference between the contextual vs. dispositional attribution, with positive scores indicating more holistic (i.e., less dispositional) attribution.

Holistic cognition 3. Framed line test (FLT). To examine focused vs. holistic attention in a non-social domain, we administered the framed line task (FLT) (Kitayama et al., 2003). This task assesses how much people are influenced by contextual information. People who are less influenced by the context are considered more analytic, whereas those who pay more attention to the context are described as more holistic. The task was presented in a booklet, which contained a cover page with instructions that the experimenter went through. Participants first saw a square with a vertical line embedded in it for 5 seconds. Then, they flipped the page and saw another square that was bigger, smaller or the same size without a line. Their task was to

draw a line inside the new square that was either identical to the line they had seen on the previous page (absolute version of the task) or keeping the same proportion with the line and square from the previous page (relative version of the task). They had 5 seconds to draw the line. In total, participants completed three practice trials for each version of the task (absolute and relative), followed by six critical trials. The order of the tasks was counterbalanced. The main dependent variable was the absolute value of the error (in mm) in the critical trials. Lower error in the relative compared to absolute tasks indicates more holistic (vs. analytic) thinking. Prior to analyses, participants were excluded if they told the experimenter they did not understand the task at the end (e.g., said they did the relative task when they were supposed to do the absolute version). This resulted in 2 fewer participants in the US and Colombia respectively. In Colombia, 3 additional participants were excluded because the photocopies of the booklets were faulty (i.e., had the trials in the incorrect order).

Explicit self-construal. In order to examine explicit beliefs about how independent (e.g., *I am comfortable with being singled out for praise or rewards*) and interdependent (e.g., *It is important for me to maintain harmony within my group*) the self is, we used a 23-item version of the Singelis self-construal scale (Singelis, 1994). Participants rated their endorsement of each statement with a 5-point scale (1 = strongly disagree, 5 = strongly agree). Reliabilities for interdependent and independent self-construal were typical for this scale (low-adequate) for Colombians ($\alpha = .54$ and $.54$), European Americans ($\alpha = .63$ and $.68$), and Japanese ($\alpha = .70$ and $.57$). Lastly, we included several demographic variables: age, gender, region, religion, cultural background, and social status (see Supplementary Information for details).

Procedure

All participants were tested in small groups in a lab room. After filling out the informed consent form, they performed FLT first under the supervision of the experimenter, followed by the remaining tasks on the computer terminal, including the trend reversal task, attribution task, and emotion expression implicit social orientation questionnaire. Among the tasks of interest for

this study (on holistic cognition and emotional expression), several tasks assessing other psychological tendencies were interspersed. The order of the tasks was identical in all three locations. After all the tasks, participants filled out demographic variables. Afterward, participants were debriefed and compensated for their time in a culturally appropriate fashion as allowed by each institution. In Colombia students were given a restaurant gift card for 20,000 Colombian pesos, course credit in the United States, and 1500 yen in Japan.

Results

The results are organized by the three types of measures we tested, emotion expression, holistic cognition, and self-construal.

Emotional Expression

We followed the analytic approach in Study 1 and submitted the expressiveness ratings to a 3 (Country: Colombia, US, or Japan; between-participant) x 2 (Emotion Valence: Positive or Negative; within-participant) x 2 (Emotion Engagement: Engaging or Disengaging; within-participant) mixed ANOVA. As in Study 1, there were many statistically significant main effects and first- and second-order interactions (Table 4).⁵

Table 4.
Predictors of variation in emotional expression

Variable	<i>F</i>	<i>df</i>	<i>p</i>	η^2p
Country	51.39	2.00	<.001	0.16
Emotion Valence	493.46	1.00	<.001	0.47
Emotion Engagement	0.08	1.00	0.79	0.00
Emotion Valence * Country	66.80	2.00	<.001	0.20
Emotion Engagement * Country	27.75	2.00	<.001	0.09
Emotion Valence * Emotion Engagement	130.96	1.00	<.001	0.19
Emotion Valence * Emotion Engagement * Country	51.60	2.00	<.001	0.16
Error		548.00		

⁵ In a separate ANOVA we also included Gender as an additional independent variable, which did not qualify our main effects of interest (see SI).

Figure 2 illustrates the 3-way interaction. As can be seen, the pattern observed for Latin Americans (Chileans and Mexicans) and European Americans in Study 1 (Figure 1) was closely replicated in the new comparison between Colombians and European Americans. The Japanese pattern was different from the patterns for both Colombians and European Americans.

Figure 2.

Country x Emotion Valence x Emotion Engagement interaction for Colombians, European Americans and Japanese.

To start with positive emotions, the Country main effect was significant, $F(2,548) = 29.60$, $p < .001$, $\eta^2 p = .10$. Colombians reported expressing positive emotions most, followed by European Americans and Japanese, who were the least expressive. However, this effect was more pronounced for the engaging emotions (e.g., friendly feelings) than for the disengaging emotions (e.g., pride), as indicated by a highly significant interaction between Country and Emotion Engagement, $F(2,548) = 18.01$, $p < .001$, $\eta^2 p = .06$. Colombians reported expressing the positive engaging emotions more than their disengaging counterparts, ($M_{diff} = .51$, 95% CI = [.40,.63]). This effect of Emotion Engagement was weaker and no longer significant for both

European Americans, ($M_{diff} = .08$, 95% $CI = [-.021, .19]$), and Japanese, ($M_{diff} = .11$, 95% $CI = [-.007, .22]$).

The pattern for negative emotions was quite different. Both Colombians and European Americans expressed engaging negative emotions less than disengaging negative emotions as shown by negative values ($M_{diff} = -.39$, 95% $CI = [-.47, -.30]$ and $M_{diff} = -.48$, 95% $CI = [-.56, -.40]$, respectively). However, this effect of Emotion Engagement was weaker, albeit marginally, for Colombians than for European Americans, $p = .10$. This is similar to the pattern observed in Study 1. In contrast, Japanese showed a markedly different pattern: They reported expressing negative engaging emotions more than negative disengaging emotions ($M_{diff} = .20$, 95% $CI = [.12, .28]$). This resulted in a significant interaction between Emotion Engagement and Country, $F(2, 548) = 77.39$, $p < .001$, $\eta^2 p = .022$.

As can be seen in Table 4, all the three 2-way interactions were significant. The Culture x Emotion Engagement interaction was highly significant. With Emotions Valence collapsed, Colombians reported expressing engaging emotions more than disengaging emotions ($M_{diff} = .07$, 95% $CI = [-.005, .14]$). Japanese also reported expressing engaging emotions more than disengaging emotions ($M_{diff} = .15$, 95% $CI = [.08, .22]$). These two groups did not differ significantly, $p = .10$. In contrast, European Americans were significantly different from both groups and showed the opposite pattern and expressed disengaging emotions more than engaging emotions ($M_{diff} = -.20$, 95% $CI = [-.27, -.13]$), $ps < .001$. Note, however, (i) Colombians showed the Emotion Engagement effect only for positive emotions. But (ii) Japanese showed this effect for negative emotions. Moreover, (iii) European Americans showed the reversal of the Emotion Engagement effect observed for Colombians and Japanese, but this effect occurred primarily for negative emotions. In combination, these cross-culturally different patterns resulted in the 3-way interaction.

Second, the Emotion Valence x Country interaction was also significant. Positive emotions were reportedly expressed more than negative emotions in all three countries.

However, this effect was more pronounced for Colombians than for European Americans, as in Study 1. Japanese were less expressive than both Colombians and European Americans and showed a greater balance by reportedly expressing positive and negative emotions to a similar degree.

Third, the Emotion Valence x Emotion Engagement interaction shows that positive engaging emotions were reportedly expressed more than positive disengaging emotions, whereas negative disengaging emotions were reportedly expressed more than negative engaging emotions. However, the first positive emotion effect was observed only for Colombians. The second effect for negative emotions was observed for European Americans and somewhat less clearly for Colombians, and it was reversed for Japanese. These patterns again contributed to the 3-way interaction.

Lastly, two of the three main effects proved significant. First and most important, the Country main effect showed that Colombians were more expressive than European Americans, $p < .001$. Both these two groups were significantly more expressive than Japanese, $p < .001$. The Valence main effect showed that positive emotions were expressed more than their negative counterparts. Importantly, these main effects were qualified by several interactions including the 3-way interaction (Country x Emotion Valence x Emotion Engagement), as discussed above.

Holistic Cognition and Interdependence

Trend reversal task. Table 5 shows the means for the likelihood that a trend will reverse. There was a highly significant main effect of Country, $F(2, 553) = 73.19$, $p < .001$, $\eta^2p = .21$. The estimated likelihood of change was significantly higher for Colombians, followed by Japanese and European Americans, $ps < .001$.

Social attribution. The mean dispositional and situational attribution scores in the three countries are reported in Table 5. In all three countries, there was dispositional bias, as shown by higher means for dispositional as opposed to situational attributions. However, this bias

varied in magnitude across the three countries, as indicated by the Country x Attribution interaction, $F(2, 551) = 10.48, p < .001, \eta^2 p = .037$. When the dispositional attribution score was subtracted from the situational attribution score to yield an index of situational vs. dispositional bias, European Americans showed a significantly stronger bias than Colombians and Japanese, $p = .019$ and $p < .001$, respectively. This bias was also stronger among Colombians than Japanese, $p = .036$.

Table 5.

Means and standard deviations for the measures of holistic cognition and interdependence in the present work. 95% confidence intervals for all means are in brackets.

		Colombia	US	Japan
Trend reversal task				
% of reversal	<i>M</i>	41.78 [39.90, 43.65]	26.33 [24.60, 28.06]	36.03 [34.18, 37.88]
	<i>SD</i>	14.35	11.41	12.04
Social attribution				
Dispositional rating	<i>M</i>	6.12 [6.01, 6.23]	6.23 [6.13, 6.33]	6.04 [5.93, 6.14]
	<i>SD</i>	0.84	0.71	0.62
Situational rating	<i>M</i>	4.99 [4.84, 5.14]	4.81 [4.68, 4.95]	5.17 [5.03, 5.32]
	<i>SD</i>	1.12	1.01	0.8
Difference		-1.13	-1.42	-0.87
Framed line test				
Absolute task error	<i>M</i>	9.68 [8.77, 10.58]	9.08 [8.24, 9.92]	9.55 [8.67, 10.44]
	<i>SD</i>	8.54	4.45	4.38
Relative task error	<i>M</i>	6.09 [5.46, 6.71]	6.42 [5.84, 7.01]	4.75 [4.13, 5.36]
	<i>SD</i>	3.33	5.012	3.86
Difference		-3.59	-2.66	-4.8
Self-construal				
Independence	<i>M</i>	3.7 [3.63, 3.78]	3.43 [3.36, 3.50]	3.34 [3.27, 3.41]
	<i>SD</i>	0.46	0.51	0.44
Interdependence	<i>M</i>	3.33 [3.26, 3.40]	3.5 [3.44, 3.57]	3.25 [3.18, 3.32]
	<i>SD</i>	0.44	0.44	0.48
Difference		0.37	-0.06	0.09

Framed-line task. The mean errors for the absolute and relative tasks in the three countries are reported in Table 5. In all three countries, the error was greater in the absolute

task than in the relative task. However, the magnitude of the error in the absolute (vs. relative) task varied across countries, as indicated by the Country x Task interaction, $F(2, 543) = 2.25$, $p = .015$, $\eta^2p = .015$. When the relative task error was subtracted from the absolute task error to yield an index of holistic attention, this score was significantly greater among Japanese compared to European Americans, $p = .004$. Colombians fell in-between and were no different from either European Americans or Japanese, $p = .114$ and $p = .211$, respectively.

Self-construal

To examine whether self-reported self-construal showed a similar pattern to the implicit measures, we assessed cultural differences in the two subscales. Of note, the reliability for this particular measure was low, so caution is due in its interpretation. Table 5 shows the mean scores for independent and interdependent self-construal respectively, for each cultural group. For the independence subscale, there was a significant main effect of Country, $F(2, 539) = 27.29$, $p < .001$, $\eta^2p = .092$. Colombians reported being significantly more independent than Japanese and Americans, who did not differ from each other, $p = .063$. As for interdependent self-construal, there was also a significant effect of Country, $F(2, 540) = 15.32$, $p < .001$, $\eta^2p = .054$. European Americans reported being significantly more interdependent than Colombians and Japanese, who did not differ from each other, $p = .102$.

Discussion

Study 2 provided further evidence for expressive interdependence among Latin Americans. As was true with Chileans and Mexicans in Study 1, the emotional expressiveness of Colombians was particularly evident in positive engaging emotions: They expressed positive engaging emotions significantly more than positive disengaging emotions. For European Americans, the effect of engagement for positive emotions was significantly attenuated in Study 1 and not significant in Study 2. For negative emotions, Colombians and European Americans expressed disengaging emotions more than engaging emotions. As was also true with Chileans and Mexicans in Study 1, this effect of engagement was weaker for Colombians than for

European Americans. Overall, when Emotion Valence was collapsed, Colombians expressed engaging (vs. disengaging) emotions more. In contrast, European Americans expressed disengaging (vs. engaging) emotions more. Of note, this European American pattern, which was not significant in Study 1, proved significant in Study 2.

The Japanese pattern was also notable. Compared to both Colombians and European Americans, Japanese expressed emotions less overall. However, when we tested the Emotion Engagement effect while collapsing across Emotion Valence, we observed that Japanese expressed engaging (vs. disengaging) emotions more, supporting the proposition that Japanese are as interdependent as Colombians.

Although Colombians and Japanese were similar in their overall propensity toward interdependence (as reflected in the greater tendency to express engaging rather than disengaging emotions), they were also remarkably different at a more granular level. That is, while both groups expressed engaging emotions more than disengaging emotions, this effect emerged only in the positive domain for Colombians, but only in the negative domain for Japanese. The Colombian pattern is in line with prior theorizing that Latin Americans favor positive emotions (Campos & Kim, 2017). In contrast, the Japanese pattern might show that their interdependence rests on emotions, such as guilt and shame, that motivate them to repair damages in relationships.

Two additional findings are noteworthy. First, we used three tasks that represented different facets of holistic cognition. Both Colombians and Japanese were relatively more holistic than European Americans. Apart from the Framed-line task, the difference between the two interdependent groups and the European American group was statistically significant. Although Colombians were sometimes less holistic than Japanese (as in the Framed-line task and attribution task), they were more so in the trend reversal task. Hence, there is no evidence that Colombians and Japanese are systematically different in holistic cognition. This finding is important in the backdrop of prior evidence linking holistic cognition to interdependent

orientations (Varnum et al., 2010). The results on the holistic cognition measures converge with the emotion expressiveness results above to support the conclusion that both Latin Americans (represented by Chileans and Mexicans in Study 1 and Colombians in Study 2) and East Asians (represented by Japanese) are interdependent.

Second, the Singelis measure self-construal showed an inconsistent ordering of the three groups. Among the three groups, Colombians were most independent, whereas European Americans were most interdependent. We will return to this puzzling finding in the General Discussion.

General Discussion

Expressive Interdependence in Latin America

In the current work, we have provided the first evidence for the hypothesis that Latin American culture has an emotionally expressive form of interdependence, characterized by the expression of positive socially engaging emotions. Specifically, Latin Americans were as emotionally expressive as European Americans. However, whereas European Americans tended to express social disengaging (rather than engaging) emotions more (reflecting their independence), Latin Americans expressed socially engaging (rather than disengaging) emotions (underscoring their interdependence). This tendency to express socially engaging emotions was particularly robust in the positive rather than negative domain, consistent with the notion that Latin Americans seek positive and amicable social relations (Campos & Kim, 2017; Holloway et al., 2009; Triandis et al., 1984). Our finding is also consistent with an earlier observation that Latin American cultures have a large number of scripts for socially positive behaviors, which are recognized as instances of the culturally elaborated state of *simpatía*—the valued state of interpersonal resonance and mutual understanding widely shared in Latin American culture (Acevedo et al., 2020; Ondish et al., 2019; Triandis et al., 1984).

Another important finding concerns holistic cognition. Prior evidence suggests that people in interdependent cultures are also cognitively holistic (Varnum et al., 2010). Consistent

with the hypothesis that Latin Americans and Japanese are interdependent, both groups were similar and significantly more holistic than European Americans. This evidence is in line with earlier evidence to the same effect in Brazil (de Oliveira & Nisbett, 2017). Our finding adds further support to the hypothesis that Latin Americans are interdependent, in contrast to European Americans, who are demonstrably analytic in their cognitive style—a style typically linked to independence.

Interdependence in Latin America and East Asia

It bears an emphasis that Japanese expressed emotions less than both Latin Americans and European Americans, consistent with prior evidence that East Asians (including Japanese) achieve interdependence by suppressing emotions (Chentsova-Dutton & Tsai, 2010; Kraus & Kitayama, 2019). As expected from work examining emotional experience (Kitayama, Mesquita, et al., 2006; Kitayama et al., 2009), when Japanese expressed emotions, they expressed socially engaging emotions more than disengaging ones. At this general level, Japanese were as interdependent as Latin Americans. However, the two cultural groups diverged in one important way: Whereas the tendency to express engaging (vs. disengaging) was found for positive emotions for Latin Americans (i.e., expressing “friendly feelings” more than “pride”), the heightened expression of engaging emotions over disengaging emotions was found for only negative emotions (i.e., expressing “guilt” more than “frustration”) for Japanese.

Thus, unlike Latin American culture (which is organized around positive engaging emotions with the idiom of *simpatía*), East Asian culture (including Japan) emphasizes self-effacement or self-criticism (Kitayama et al., 1997; Salvador et al., 2021), emotion suppression (Kraus & Kitayama, 2019), and, as shown in Study 2 here, the expression of negative engaging emotions such as guilt and shame. Negative engaging negative emotions, such as guilt, shame,

and feelings of indebtedness, are likely to play a pivotal role in initiating and motivating this process of self-improvement (Heine et al., 1999; Kitayama et al., 1997).⁶

Empirical Anomalies in the Culture and the Self Research

The focus of the present work was on measures of independence or interdependence that were “implicit” (Kitayama et al., 2009). We asked participants to report how strongly they would express various emotions and examined the relative tendency to express engaging (vs. disengaging) emotions as an index of interdependence (vs. independence). Our measures did not involve explicit assessment of the self as independent or interdependent. For comprehensiveness, Study 2 included an attitudinal measure of self-construal, which involves an explicit assessment of the self on independence and interdependence. Using this explicit measure, we found a very different pattern. Colombians came out as being more independent than either European Americans or Japanese. There was no significant difference between the latter two groups. Further, European Americans reported being most interdependent, followed by Colombians. Japanese were the least interdependent.

The pattern we found in the explicit measure of independence and interdependence can be dismissed as an anomaly and unreliable, since the Colombian scale did not achieve adequate reliability. However, even if our findings represent an anomaly, this anomaly itself appears replicable. In a recent paper, Kryś et al. (2022) used a similar explicit attitudinal measure of self-construal (Vignoles et al., 2016). They observed that Latin Americans are highly independent (as in our Study 2) and are no different from European Americans. Further, in our Study 2, European Americans were the most interdependent among the cultural groups tested.

⁶ One illustration of this process comes from the Olympics Games Tokyo 2020, where some Japanese athletes expressed guilt and contrition even when they won a silver medal. As one observer put it, they were “second best, but still saying sorry” (Rich, 2021). Based on the current data, we might speculate that these Japanese Olympic athletes focused on what they failed to achieve, namely, to get the Gold because they were keenly aware of the high expectations people in their country had. Although it might seem extraordinary to feel sorry for being the second-best in the world, avoiding guilt, shame, and other negative engaging emotions might have been the very source of the motivation to work hard for the Gold.

Our finding is similar to what was observed by Kitayama et al. (2009) who tested implicit independence and interdependence in the U.S., Germany, the U.K., and Japan. They found that implicit independence is higher (or implicit interdependence is lower) in the three Western cultures than in Japan. However, as in our Study 2, they included the Singelis self-construal scale and found an anomaly. Germans were more independent than either European Americans or British, with Japanese falling right in-between.

What's "Wrong" with the Attitudinal Measure of Self-Construal?

Why are the cross-cultural patterns so different, depending on whether the measures being used are implicit or explicit? With implicit measures, the pattern is highly consistent and systematic, with East Asians being more interdependent than European Americans (Na et al., 2010). Moreover, we have offered novel evidence that Latin Americans are as interdependent as East Asians using implicit measures. However, with the explicit attitudinal measures, this pattern often disappears. This observation is consistent with an earlier review by Oyserman et al. (2002). After examining numerous cross-cultural comparisons involving explicit attitudinal measures of self-construal, Oyserman et al. (2002) concluded that although Western cultures are more independent or less interdependent than the rest, there is a massive within-region variation (Oyserman et al., 2002). Thus, more often than not, the pattern for the explicit measures deviates from the one consistently observed with the implicit measures. We suspect that a few considerations are essential in understanding the anomalies commonly observed with explicit self-construal measures.

First, people might or might not value their chronic behavioral tendencies. Smokers might not value smoking. Likewise, being independent or interdependent does not necessarily entail a strong personal value placed on one or the other (Kitayama, 2002). In an extreme case, highly individualistic Americans might value interdependence, or conversely, highly collectivistic Japanese might long for independence simply because they lack these values. Such attitudinal

biases might lend themselves to demand characteristics. The explicit measures of self-assessment are far more susceptible to demand characteristics than the implicit measures.

Second, as Heine et al. (2002) noted, to express attitudes toward independence or interdependence, one must often compare the self with a reference group (Heine et al., 2002). Different cultural groups have different references, thereby compromising valid cross-cultural comparisons. This would be the case even when the scale used was both valid and reliable. Indeed, self-construal scales have proved useful in assessing individual differences within each culture (Na & Kitayama, 2011; Yu et al., 2021). Nevertheless, the reference group artifact could compromise the validity of the scale as a measure in cross-cultural comparisons. The reference group artifact is unlikely for implicit measures because these measures do not require reference groups.

Third, the explicit measures involve the interpretation of linguistic propositions. When asked to indicate an attitude toward “independence,” one must know what “independence” is (Peng et al., 1997). The attitude toward this concept would be very different, depending on what the concept might mean and how it is interpreted. It is conceivable that the concept of interdependence is highly elaborate and multifaceted (e.g., involving interpersonal care, liking, sympathy, obligation, duty, and belonging, among others) in Japan and Latin America, given its long tradition of collectivism. Thus, people might have to clear many hurdles before concluding that they are truly interdependent. In contrast, the concept might be relatively more impoverished for European Americans. To be interdependent might merely involve, say, “having a good time with friends” or “belonging to this or that group.” Consequently, it might be far easier to arrive at a conclusion that one is interdependent in the U.S. than in either Japan or Latin America. Future work must address the precise nature of the anomalies uncovered in the literature and determine the specific social and cultural psychological mechanisms producing them.

Limitations and Future Directions

One important strength of our work stems from the fact that we tested three divergent countries in the single cultural region of interest, namely, Latin America. We found a remarkably high degree of convergence in the cultural region, suggesting our phenomenon, expressive interdependence, is robust and widespread in Latin American culture. Moreover, the Latin American pattern was quite similar in both non-student adults (Study 1) and college students (Study 2). However, like many studies in psychology, our samples were convenience samples. Future work would benefit from obtaining more representative samples of each of the cultural zones.

Second, our work says little about how expressive interdependence evolved in Latin America. One could argue that this form of interdependence was transplanted from the Mediterranean regions, especially from Spain and its vicinities, given the history of conquest of the continent by the European countries in the 15th and 16th centuries. The culture of these regions may have been highly expressive already⁷. It is also possible that in ethnically diverse societies with multiple languages, like many ancestral cultures in Latin America around the 15th century before the European conquest, use emotional expression for the purpose of social communication (Niedenthal et al., 2019; Rychlowska et al., 2015). Future work must clarify the historical and developmental origins of expressive interdependence in Latin America.

Third, our work shows that expressive interdependence (a combination of emotional expressivity and interdependence) is quite prominent in Latin American culture. However, it remains to be seen whether this pattern could be found outside this region. For example, Africans might be as expressive of socially engaging emotions as Latin Americans. Only future empirical work can tell. Of importance, along with its predecessors (Kitayama et al., 2009; San

⁷ The Mediterranean regions, in turn, owe much to Roman traditions for their culture. The ancient Roman Republic not only covered a vast terrain but also was known for diversity and inclusion (Eckstein, 2007). This diversity in the vast geographic terrain covered may have lent itself to the need to use emotions for social communication. This condition of the Mediterranean regions may have been reproduced in Latin America with the arrival of Europeans in the 15th century onward.

Martin et al., 2018), our work drew on prior studies comparing European Americans and East Asians. Thus, as we globalize cultural psychology, more effort will be needed to develop tasks that are better calibrated to reflect the cultural ethos of each of the different regions.

Fourth, our result on holistic cognition is consistent with the proposition that Latin Americans are interdependent since holistic cognition is typically associated with interdependence in multiple cultural groups, including European Americans, Western Europeans, and East Asians. Nevertheless, this association has yet to be tested outside of these cultural groups. Moreover, one could argue that non-holistic cognition can sometimes be linked to interdependence. For example, logical reasoning (a hallmark of non-holistic cognition; Nisbett et al., 2001) is typically seen as the core feature of the self's independence. However, logical reasoning might be linked to argumentation, which, in turn, could be instrumental in advancing social relationships (Mercier & Sperber, 2011). The possibility that non-holistic cognition might sometimes be related to a form of interdependence must be systematically addressed in future work.

Despite these limitations, the current work has pushed the literature one clear step forward by identifying a new cultural profile, expressive interdependence, in Latin America. This profile is distinct from both (i) the emotion suppressing and self-effacing interdependence found among East Asians and (ii) independence among European Americans. Along with recent work focused on Arab regions (San Martin et al., 2018), our work has begun to reveal the varieties of interdependence across the globe. Through further empirical effort along this line, we may hope to draw a fuller picture of cultural evolution, namely, how ecology, demography, geography, and the like interacted to yield various cultures throughout the last several millennia (Henrich, 2015; Kitayama & Uskul, 2011; Muthukrishna et al., 2021). This analysis may illuminate how Western individualism emerged over the last several hundred years (Kitayama, Ishii, et al., 2006; Schulz et al., 2019). Such a systematic inquiry into the evolution of culture over the last 10,000 years

may help us realize an integrative theory of the human mind and, by so doing, enrich the current views of what it means to be a human.

References

- Acevedo, A. M., Herrera, C., Shenhav, S., Yim, I. S., & Campos, B. (2020). Measurement of a Latino cultural value: The Simpatía scale. *Cultural Diversity and Ethnic Minority Psychology, 26*(4), 419–425. <https://doi.org/10.1037/cdp0000324>
- Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American. *American Psychologist, 63*(7), 602–614. <https://doi.org/10.1037/0003-066X.63.7.602>
- Campos, B., & Kim, H. S. (2017). Incorporating the cultural diversity of family and close relationships into the study of health. *American Psychologist, 72*(6), 543–554. <https://doi.org/10.1037/amp0000122>
- Chentsova-Dutton, Y. E., & Tsai, J. L. (2010). Self-focused attention and emotional reactivity: The role of culture. *Journal of Personality and Social Psychology, 98*(3), 507–519. <https://doi.org/10.1037/a0018534>
- Cowen, A. S., & Keltner, D. (2017). Self-report captures 27 distinct categories of emotion bridged by continuous gradients. *Proceedings of the National Academy of Sciences, 114*(38), E7900–E7909. <https://doi.org/10.1073/pnas.1702247114>
- Darwin, C. (1972). *The expression of emotion in man and animals*. New York, NY: Appelton.
- De Almeida, I., & Uchida, Y. (2018). Examining Affective Valence in Japanese and Brazilian Cultural Products: An Analysis on Emotional Words in Song Lyrics and News Articles. *Psychologia, 61*(3), 174–184. <https://doi.org/10.2117/psysoc.2019-A103>
- de Oliveira, S., & Nisbett, R. E. (2017). Beyond East and West: Cognitive Style in Latin America. *Journal of Cross-Cultural Psychology, 48*(10), 1554–1577. <https://doi.org/10.1177/0022022117730816>
- Eckstein, A. M. (2007). Mediterranean Anarchy, Interstate War, and the Rise of Rome. In *Mediterranean Anarchy, Interstate War, and the Rise of Rome*. University of California Press. <https://doi.org/10.1525/9780520932302>

- Ekman, P., & Cordaro, D. (2011). What is Meant by Calling Emotions Basic. *Emotion Review*, 3(4), 364–370. <https://doi.org/10.1177/1754073911410740>
- Ekman, P., Sorenson, E. R., & Friesen, W. V. (1969). Pan-Cultural Elements in Facial Displays of Emotion. *Science*, 164(3875), 86–88. <https://doi.org/10.1126/science.164.3875.86>
- Ellsworth, P. C. (2013). Appraisal Theory: Old and New Questions. *Emotion Review*, 5(2), 125–131. <https://doi.org/10.1177/1754073912463617>
- Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward Family Obligations among American Adolescents with Asian, Latin American, and European Backgrounds. *Child Development*, 70(4), 1030–1044. <https://doi.org/10.1111/1467-8624.00075>
- Hampton, R. S., Kwon, J. Y., & Varnum, M. E. W. (2019). Variations in the regulation of affective neural responses across three cultures. *Emotion*. <https://doi.org/10.1037/emo0000711>
- Heine, S. J., Lehman, D. R., Markus, H. R., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review*, 106(4), 766–794. <https://doi.org/10.1037/0033-295X.106.4.766>
- Heine, S. J., Lehman, D. R., Peng, K., & Greenholtz, J. (2002). What's wrong with cross-cultural comparisons of subjective Likert scales?: The reference-group effect. *Journal of Personality and Social Psychology*, 82(6), 903–918. <https://doi.org/10.1037/0022-3514.82.6.903>
- Henrich, J. (2015). *The Secret of Our Success: How Culture Is Driving Human Evolution, Domesticating Our Species, and Making Us Smarter*. Princeton University Press.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2–3), 61–83. <https://doi.org/10.1017/S0140525X0999152X>
- Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-Related Values*. SAGE.

- Holloway, R. A., Waldrip, A. M., & Ickes, W. (2009). Evidence that a simpático self-schema accounts for differences in the self-concepts and social behavior of Latinos versus Whites (and Blacks). *Journal of Personality and Social Psychology*, 96(5), 1012–1028. <https://doi.org/10.1037/a0013883>
- Ji, L.-J., Nisbett, R. E., & Su, Y. (2001). Culture, Change, and Prediction. *Psychological Science*, 12(6), 450–456. <https://doi.org/10.1111/1467-9280.00384>
- Keltner, D., & Haidt, J. (1999). Social Functions of Emotions at Four Levels of Analysis. *Cognition & Emotion*, 13(5), 505–521. <https://doi.org/10.1080/026999399379168>
- Kitayama, S. (2002). Culture and basic psychological processes--Toward a system view of culture: Comment on Oyserman et al. (2002). *Psychological Bulletin*, 128(1), 89–96. <https://doi.org/10.1037/0033-2909.128.1.89>
- Kitayama, S., Duffy, S., Kawamura, T., & Larsen, J. T. (2003). Perceiving an Object and Its Context in Different Cultures: A Cultural Look at New Look. *Psychological Science*, 14(3), 201–206. <https://doi.org/10.1111/1467-9280.02432>
- Kitayama, S., Ishii, K., Imada, T., Takemura, K., & Ramaswamy, J. (2006). Voluntary settlement and the spirit of independence: Evidence from Japan's "northern frontier." *Journal of Personality and Social Psychology*, 91(3), 369–384. <https://doi.org/10.1037/0022-3514.91.3.369>
- Kitayama, S., Markus, H. R., & Kurokawa, M. (2000). Culture, Emotion, and Well-being: Good Feelings in Japan and the United States. *Cognition & Emotion*, 14(1), 93–124. <https://doi.org/10.1080/026999300379003>
- Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, 72(6), 1245–1267. <https://doi.org/10.1037/0022-3514.72.6.1245>

- Kitayama, S., Mesquita, B., & Karasawa, M. (2006). Cultural affordances and emotional experience: Socially engaging and disengaging emotions in Japan and the United States. *Journal of Personality and Social Psychology*, 91(5), 890–903.
<https://doi.org/10.1037/0022-3514.91.5.890>
- Kitayama, S., Park, H., Sevincer, A. T., Karasawa, M., & Uskul, A. K. (2009). A cultural task analysis of implicit independence: Comparing North America, Western Europe, and East Asia. *Journal of Personality and Social Psychology*, 97(2), 236–255.
<https://doi.org/10.1037/a0015999>
- Kitayama, S., & Park, J. (2014). Error-related brain activity reveals self-centric motivation: Culture matters. *Journal of Experimental Psychology: General*, 143(1), 62–70.
<https://doi.org/10.1037/a0031696>
- Kitayama, S., Snibbe, A. C., Markus, H. R., & Suzuki, T. (2004). Is There Any “Free” Choice?: Self and Dissonance in Two Cultures. *Psychological Science*, 15(8), 527–533.
<https://doi.org/10.1111/j.0956-7976.2004.00714.x>
- Kitayama, S., & Uskul, A. K. (2011). Culture, Mind, and the Brain: Current Evidence and Future Directions. *Annual Review of Psychology*, 62(1), 419–449.
<https://doi.org/10.1146/annurev-psych-120709-145357>
- Kraus, B., & Kitayama, S. (2019). Interdependent self-construal predicts emotion suppression in Asian Americans: An electro-cortical investigation. *Biological Psychology*, 146, 107733.
<https://doi.org/10.1016/j.biopsycho.2019.107733>
- Krys, K., Vignoles, V. L., de Almeida, I., & Uchida, Y. (2022). Outside the “Cultural Binary”: Understanding Why Latin American Collectivist Societies Foster Independent Selves. *Perspectives on Psychological Science*, 17456916211029632.
<https://doi.org/10.1177/17456916211029632>

- Lindquist, K. A. (2013). Emotions Emerge from More Basic Psychological Ingredients: A Modern Psychological Constructionist Model. *Emotion Review*, 5(4), 356–368.
<https://doi.org/10.1177/1754073913489750>
- Lutz, C., & White, G. M. (1986). The Anthropology of Emotions. *Annual Review of Anthropology*, 15(1), 405–436. <https://doi.org/10.1146/annurev.an.15.100186.002201>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224–253. <https://doi.org/10.1037/0033-295X.98.2.224>
- Mercier, H., & Sperber, D. (2011). Why do humans reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences*, 34(2), 57–74; discussion 74-111.
<https://doi.org/10.1017/S0140525X10000968>
- Murata, A., Moser, J. S., & Kitayama, S. (2013). Culture shapes electrocortical responses during emotion suppression. *Social Cognitive and Affective Neuroscience*, 8(5), 595–601.
<https://doi.org/10.1093/scan/nss036>
- Muthukrishna, M., Henrich, J., & Slingerland, E. (2021). Psychology as a Historical Science. *Annual Review of Psychology*, 72(1), 717–749. <https://doi.org/10.1146/annurev-psych-082820-111436>
- Na, J., Grossmann, I., Varnum, M. E. W., Karasawa, M., Cho, Y., Kitayama, S., & Nisbett, R. E. (2019). Culture and personality revisited: Behavioral profiles and within-person stability in interdependent (vs. independent) social orientation and holistic (vs. analytic) cognitive style. *Journal of Personality*. <https://doi.org/10.1111/jopy.12536>
- Na, J., Grossmann, I., Varnum, M. E. W., Kitayama, S., Gonzalez, R., & Nisbett, R. E. (2010). Cultural differences are not always reducible to individual differences. *Proceedings of the National Academy of Sciences*, 107(14), 6192–6197.
<https://doi.org/10.1073/pnas.1001911107>

- Na, J., & Kitayama, S. (2011). Spontaneous Trait Inference Is Culture-Specific: Behavioral and Neural Evidence. *Psychological Science*, 22(8), 1025–1032.
<https://doi.org/10.1177/0956797611414727>
- Niedenthal, P. M., Rychlowska, M., Zhao, F., & Wood, A. (2019). Historical Migration Patterns Shape Contemporary Cultures of Emotion. *Perspectives on Psychological Science*, 14(4), 560–573. <https://doi.org/10.1177/1745691619849591>
- Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, 108(2), 291–310.
<https://doi.org/10.1037/0033-295X.108.2.291>
- Ondish, P., Cohen, D., Lucas, K. W., & Vandello, J. (2019). The Resonance of Metaphor: Evidence for Latino Preferences for Metaphor and Analogy. *Personality and Social Psychology Bulletin*, 45(11), 1531–1548. <https://doi.org/10.1177/0146167219833390>
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, 128(1), 3–72. <https://doi.org/10.1037/0033-2909.128.1.3>
- Peng, K., Nisbett, R. E., & Wong, N. Y. C. (1997). Validity problems comparing values across cultures and possible solutions. *Psychological Methods*, 2(4), 329–344.
<https://doi.org/10.1037/1082-989X.2.4.329>
- Rich, M. (2021). *Second Best in the World at the Tokyo Olympics, but Still Saying Sorry—The New York Times*. <https://www.nytimes.com/2021/08/05/world/asia/japan-olympics-apology.html>
- Ruby, M. B., Falk, C. F., Heine, S. J., Villa, C., & Silberstein, O. (2012). Not all collectivisms are equal: Opposing preferences for ideal affect between East Asians and Mexicans. *Emotion*, 12(6), 1206–1209. <https://doi.org/10.1037/a0029118>

- Russell, J. A., & Barrett, L. F. (1999). Core Affect, Prototypical Emotional Episodes, and Other Things Called Emotion: Dissecting the Elephant. *Journal of Personality and Social Psychology*, 15.
- Rychlowska, M., Miyamoto, Y., Matsumoto, D., Hess, U., Gilboa-Schechtman, E., Kamble, S., Muluk, H., Masuda, T., & Niedenthal, P. M. (2015). Heterogeneity of long-history migration explains cultural differences in reports of emotional expressivity and the functions of smiles. *Proceedings of the National Academy of Sciences*, 112(19), E2429–E2436. <https://doi.org/10.1073/pnas.1413661112>
- Sabogal, F., Marín, G., Otero-Sabogal, R., Marín, B. V., & Perez-Stable, E. J. (1987). Hispanic Familism and Acculturation: What Changes and What Doesn't? *Hispanic Journal of Behavioral Sciences*, 9(4), 397–412. <https://doi.org/10.1177/07399863870094003>
- Salvador, C. E., Kamikubo, A., Kraus, B., Hsiao, N.-C., Hu, J.-F., Karasawa, M., & Kitayama, S. (2021). Self-referential processing accounts for cultural variation in self-enhancement versus criticism: An electrocortical investigation. *Journal of Experimental Psychology: General*. <https://doi.org/10.1037/xge0001154>
- San Martin, A., Sinaceur, M., Madi, A., Tompson, S., Maddux, W. W., & Kitayama, S. (2018). Self-assertive interdependence in Arab culture. *Nature Human Behaviour*, 2(11), 830–837. <https://doi.org/10.1038/s41562-018-0435-z>
- Schulz, J. F., Bahrami-Rad, D., Beauchamp, J. P., & Henrich, J. (2019). The Church, intensive kinship, and global psychological variation. *Science*, 366(6466), eaau5141. <https://doi.org/10.1126/science.aau5141>
- Shaver, P., Schwartz, J., Kirson, D., & O'Connor, G. (1987). Emotion Knowledge: Further Exploration of a Prototype Approach. *Journal of Personality and Social Psychology*, 27.
- Singelis, T. M. (1994). The Measurement of Independent and Interdependent Self-Construals. *Personality and Social Psychology Bulletin*, 20(5), 580–591. <https://doi.org/10.1177/0146167294205014>

- Soto, J. A., Lee, E. A., & Roberts, N. A. (2016). Convergence in feeling, divergence in physiology: How culture influences the consequences of disgust suppression and amplification among European Americans and Asian Americans. *Psychophysiology*, 53(1), 41–51. <https://doi.org/10.1111/psyp.12579>
- Soto, J. A., Levenson, R. W., & Ebling, R. (2005). Cultures of Moderation and Expression: Emotional Experience, Behavior, and Physiology in Chinese Americans and Mexican Americans. *Emotion*, 5(2), 154–165. <https://doi.org/10.1037/1528-3542.5.2.154>
- Telzer, E. H., Masten, C. L., Berkman, E. T., Lieberman, M. D., & Fuligni, A. J. (2010). Gaining while giving: An fMRI study of the rewards of family assistance among White and Latino youth. *Social Neuroscience*, 5(5–6), 508–518. <https://doi.org/10.1080/17470911003687913>
- Triandis, H. C., Marín, G., Lisansky, J., & Betancourt, H. (1984). Simpatía as a cultural script of Hispanics. *Journal of Personality and Social Psychology*, 47(6), 1363–1375. <https://doi.org/10.1037/0022-3514.47.6.1363>
- Tsai, J. L., Ang, J. Y. Z., Blevins, E., Goernandt, J., Fung, H. H., Jiang, D., Elliott, J., Kölzer, A., Uchida, Y., Lee, Y.-C., Lin, Y., Zhang, X., Govindama, Y., & Haddouk, L. (2016). Leaders' Smiles Reflect Cultural Differences in Ideal Affect. *Emotion (Washington, D.C.)*, 16(2), 183–195. <https://doi.org/10.1037/emo0000133>
- Tsai, J. L., Knutson, B., & Fung, H. H. (2006). Cultural variation in affect valuation. *Journal of Personality and Social Psychology*, 90(2), 288–307. <https://doi.org/10.1037/0022-3514.90.2.288>
- Tsai, J. L., Miao, F. F., Seppala, E., Fung, H. H., & Yeung, D. Y. (2007). Influence and adjustment goals: Sources of cultural differences in ideal affect. *Journal of Personality and Social Psychology*, 92(6), 1102–1117. <https://doi.org/10.1037/0022-3514.92.6.1102>
- Uchida, Y., & Kitayama, S. (2009). Happiness and unhappiness in east and west: Themes and variations. *Emotion*, 9(4), 441–456. <https://doi.org/10.1037/a0015634>

- Varnum, M. E. W., Grossmann, I., Kitayama, S., & Nisbett, R. E. (2010). The Origin of Cultural Differences in Cognition: The Social Orientation Hypothesis. *Current Directions in Psychological Science*, 19(1), 9–13. <https://doi.org/10.1177/0963721409359301>
- Vignoles, V. L., Owe, E., Becker, M., Smith, P. B., Easterbrook, M. J., Brown, R., González, R., Didier, N., Carrasco, D., Cadena, M. P., Lay, S., Schwartz, S. J., Des Rosiers, S. E., Villamar, J. A., Gavreliuc, A., Zinkeng, M., Kreuzbauer, R., Baguma, P., Martin, M., ... Bond, M. H. (2016). Beyond the 'east–west' dichotomy: Global variation in cultural models of selfhood. *Journal of Experimental Psychology: General*, 145(8), 966–1000. <https://doi.org/10.1037/xge0000175>
- Weisz, J. R., Rothbaum, F. M., & Blackburn, T. C. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, 39(9), 955–969. <https://doi.org/10.1037/0003-066X.39.9.955>
- Wood, A., Rychlowska, M., & Niedenthal, P. M. (2016). Heterogeneity of long-history migration predicts emotion recognition accuracy. *Emotion*, 16(4), 413–420. <https://doi.org/10.1037/emo0000137>
- Yu, Q., King, A. P., Yoon, C., Liberzon, I., Davidson, R. J., & Kitayama, S. (2021). Interdependent Self-Construal Predicts Increased Gray Matter Volume of Scene Processing Regions in the Brain. *Biological Psychology*, 108050. <https://doi.org/10.1016/j.biopsycho.2021.108050>