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Awe, the Diminished Self, and Collective Engagement: Universals and Cultural Variations in the Small Self

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Awe has been theorized as a collective emotion, one that enables individuals to integrate into social collectives. In keeping with this theorizing, we propose that awe diminishes the sense of self and shifts attention away from individual interests and concerns. In testing this hypothesis across 6 studies ($N = 2137$), we first validate pictorial and verbal measures of the small self; we then document that daily, in vivo, and lab experiences of awe, but not other positive emotions, diminish the sense of the self. These findings were observed across collectivist and individualistic cultures, but also varied across cultures in magnitude and content. Evidence from the last 2 studies showed that the influence of awe upon the small self accounted for increases in collective engagement, fitting with claims that awe promotes integration into social groups. Discussion focused on how the small self might mediate the effects of awe on collective cognition and behavior, the need to study more negatively valenced varieties of awe, and other potential cultural variations of the small self.

Keywords: awe, small self, culture, collective engagement

'I've crossed these sands many times,' said one of the camel drivers one night. 'But the desert is so huge, and the horizons so distant, that they make a person feel small, and as if he should remain silent.' The boy intuitively knew what he meant, even without having ever set foot in the desert before.

(Coelho, 1998, p. 73)

In the woods, we return to reason and faith. There I feel that nothing can befall me in life—no disgrace, no calamity (leaving me my eyes), which nature cannot repair. Standing on the bare ground,—my head bathed by the blithe air and uplifted into infinite space,—all mean

egotism vanishes. I become a transparent eyeball; I am nothing . . .
(Emerson, 1901, p. 39)

Accounts of awe, as in *The Alchemist* and in Emerson's essay on nature, often center upon people's sense that their individual selves are small. In the midst and aftermath of experiencing awe, one's self-interest seems inconsequential, and one's personal identity recedes into the background of conscious awareness. Awe, as it has been observed, produces a small self. For example, anecdotal evidence suggests that religious epiphany, mystical experiences, being in beautiful nature and near wondrous cultural artifacts, as well as encounters with morally exemplary people all evoke this sense of the self as small and of reduced significance (Keltner & Haidt, 2003).

That awe produces a small self is central to theoretical characterizations of this emotion. It has been argued that awe orients the individual to assume the values of social collectives and to fold into social hierarchies (Durkheim, 1887/1972; Keltner & Haidt, 2003; Weber, 1978). Assimilating into social collectives requires that individuals subordinate their own self-interests—the "mean egotism" to which Emerson refers—and prioritize the interests of others, both enabled by processes that diminish the importance of the self, including emotions such as awe (Keltner, Kogan, Piff, & Saturn, 2014; Wilson & Sober, 1998). The present research provides systematic tests of this small self hypothesis. In addition, we address two ancillary questions: What constitutes the experience of the small self? How might culture shape the small self effect?

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A Social Functional Approach: Emotions Situate the Self Within a Social Moral Order

Our investigation was guided by a social functional approach to emotions (e.g., Keltner & Haidt, 1999; Keltner & Lerner, 2010; Mesquita, Boiger, & De Leersnyder, 2016; Niedenthal & Brauer, 2012). Within this framework, emotions coordinate social interactions in ways that enable the individual to form attachments, negotiate positions within status hierarchies, build alliances, and assume collective identities—functions that are all vital to the individual's adaptation to specific, culturally shaped social contexts. On the one hand, a social functional approach has yielded advances in understanding that core emotion-related processes are likely to be universal (e.g., Keltner & Lerner, 2010). For example, studies find that embarrassment displays, laughter, expressions of love, the blush, and different smiles evoke specific inferences and reactions in others that coordinate interactions within the context of relationships (Feinberg, Willer, & Keltner, 2012; Gonzaga, Keltner, Londahl, & Smith, 2001; Niedenthal, Mermillod, Maringer, & Hess, 2010; Oveis, Horberg, & Keltner, 2010; Van Kleef, 2016). In a similar vein, emotion-related cognition—the focus of this investigation—orients the individual to self-relevant challenges and opportunities in the social context, such as sources of peril, injustice, or affection, thus enabling appropriate courses of action (Clare & Ortony, 1988; Lerner & Keltner, 2001; Schwarz, 2012).

At the same time, social functional accounts provide a framework for understanding cultural variations in emotion. Namely, variations in the components of emotion enable the individual to adapt to culturally specific demands of the social context (Mesquita et al., 2016). For example, in more hierarchical cultures, individuals experience submissive emotions with greater frequency and intensity, and have a richer language to represent them, because emotions like embarrassment situate individuals within social hierarchies (Goetz & Keltner, 2008). Emotions, then, both in their universal components and culturally specific variations, enable the individual to adapt to shifting needs and goals of different relationships and the broader cultural context; emotions “situate the self within a social-moral order” (Lutz & White, 1986).

This social functional approach has spurred several advances in understanding how emotions shift self-representation, the focus of the present investigation. For example, experiences of pride establish the individual's elevated rank within hierarchical relations, and serve to signal the individual's power and influence vis-à-vis others (Tracy & Robins, 2004, 2007). In relevant empirical studies, when compared with other status-relevant emotions such as embarrassment and shame, or less status-relevant emotions such as happiness, sadness, and disgust, pride signals high status, even among individuals, such as Fijians, who possess cultural rules prohibiting overt status displays (Shariff & Tracy, 2009; Tracy, Shariff, Zhao, & Henrich, 2013). Embarrassment and shame, by contrast, diminish the individual's sense of rank, situating the self within lower-status positions within hierarchies until conciliatory behaviors have restored the individual's standing within the group (Feinberg et al., 2012; Keltner & Buswell, 1997; Ketelaar, 2004; Tangney, Miller, Flicker, & Barlow, 1996).

These effects of pride, embarrassment, and shame on the individual's sense of rank dovetail with more general arguments about the relational self (Andersen & Chen, 2002; Baumeister, 1999;

Chen, Boucher, & Tapias, 2006; Leary, 2007). Within this line of thinking, self-representation tracks the individual's interactions with others; thus, enabling more effective social relationships (Sedikides & Skowronski, 2000). Guided by this theorizing, studies are finding that fluctuations in self-esteem covary with the individual's standing within social groups (Leary, 2005), and the content of self-knowledge shifts according to the relationship history with the interaction partner (Andersen & Chen, 2002; Chen, Boucher, & Kraus, 2011). Here we examined how one dimension of self-representation—perceived self-size—fluctuates according to momentary experiences of awe in theoretically cogent ways.

Awe Enables Collective Engagement

Awe is an emotional experience defined by two central appraisals: that one is in the presence of something vast, and that the elicitor transcends one's current frame of reference for understanding the world (Keltner & Haidt, 2003). Awe is a quintessentially collective emotion (Durkheim, 1887/1972; Keltner & Haidt, 1999; Shiota, Campos, Keltner, & Hertenstein, 2004). It often arises in collective situations—at political rallies, sporting events, concerts, artistic events, and dance—and accompanies an awareness of hierarchy and collective agency (Shiota et al., 2004). Many stimuli that elicit awe—music, inspiring leaders, art, and religious rituals—are central to the meaning systems of culture and collective identity (Van Cappellen & Rimé, 2014; Van Cappellen & Saroglou, 2012).

Folding into social collectives requires that the individual strike a balance between the pursuit of self-interest and acting in ways that enhance the interests of others (De Waal, 1996; Frank, 1988; Willer, 2009). This challenge of collective engagement is fundamental to human social life, and motivates many social processes, from the concern over personal reputation to the affordance of status to those who sacrifice for others (Brown, Brown, & Penner, 2011; Caporael, 1995; Fehr, & Fischbacher, 2003; Frank, 1988; Hardy & Van Vugt, 2006; Keltner et al., 2014; Van Vugt & Van Lange, 2006; Wedekind & Milinski, 2000; Willer, 2009). Even religion, to which awe is so integral, with its rites, texts, and practices that orient the individual to the needs of others, has been conceptualized as a solution to the problem of collective engagement (Armstrong, 2006; Norenzayan & Shariff, 2008).

Guided by the foregoing analysis and a social functional approach to emotion, we hypothesize that awe shifts attention away from the self; thus, enabling collective engagement. This hypothesis yields three classes of predictions. First, one would expect awe to influence self-representation in ways that make collective engagement more likely. For example, one would expect awe to shift the content of self-definition away from individual traits and preferences to more collective traits (Chen & Boucher, 2008). In keeping with this prediction, while experiencing awe, individuals report a stronger connection to collective social entities—their group, nation, or species—than when experiencing pride (Shiota, Keltner, & Mossman, 2007). In a similar vein, highly religious individuals expressed an elevated feeling of oneness with others after watching awe-inducing videos (Van Cappellen & Saroglou, 2012).

Second, we would expect awe to lead to social behaviors that are oriented towards advancing the interests of other individuals. On

this, recent studies have found that awe experienced both in vivo and in the lab predicted increased assistance of strangers, sharing resources, charitable giving, and volunteering (Piff, Dietze, Feinberg, Stancato, & Keltner, 2015; Rudd, Vohs, & Aaker, 2012).

Finally, one would expect awe-related shifts in self-representation to mediate the relation between awe and collective engagement. In the present investigation, we test several hypotheses that derive from this analysis of awe and the small self.

Awe and the Small Self

Experiences involving awe, such as admiration (McDougall, 1911), elevation (Algoe & Haidt, 2009), the sublime (Beardsley, 1966), and peak experiences (Maslow, 1964), often involve a small self, or what we refer to as diminished perceived self-size. Select empirical studies lend some support to this small self hypothesis. In one study of emotion narratives, participants' self-reported experiences of awe, and importantly not other positive emotions such as love or gratitude, were uniquely associated with reports of feeling small (Campos, Shiota, Keltner, Gonzaga, & Goetz, 2013). In other research, participants primed to experience awe endorsed that they felt small and insignificant during the experience to a greater extent than other positive emotions (Shiota et al., 2007). In the most systematic exploration of the small self hypothesis, Piff and colleagues (2015) found that awe experienced after a narrative recall (about nature) and in viewing video footage of striking natural scenes led participants to self-report a small self (e.g., "I feel in the presence of something greater than myself").

The present research advances these preliminary studies of awe and the small self in five ways. First, we look beyond nature to other elicitors of awe, including interpersonal elicitors, spiritual experiences, and cultural artifacts. Second, we measure the small self construct with both verbal and nonverbal, pictorial methods. Third, we pinpoint the subjective dimensions of the small self effect, ascertaining, for example, whether or not awe produces an accompanying sense of lower self-esteem and submissiveness. Fourth, we broaden conceptions of how awe—a quintessentially collective emotion—will enhance an individual's ability to fold into social collective by focusing on a new outcome of the small self hypothesis, collective engagement. Finally, past studies on awe and perceived self-size have only involved participants in the United States, leaving open the question of whether the small self effect is different in individuals with a more collective orientation. In the present investigation, we tested the small self hypothesis across Western European and East Asian cultures.

Awe, the Small Self, and the Cultural Context

Social functional approaches to emotion posit that core processes related to emotion will show universality. With respect to awe, recent studies have documented universality in awe-related expressive behavior (Cordaro, Keltner, Tshering, Wangchuk, & Flynn, 2016) and accompanying peripheral physiological response—goosebumps (Maruskin et al., in press). Here we expect the influence of awe upon the diminishing of the self and integration into the social collective, to be shared across different cultures. In this way, the small self effect may reflect a functional human universal, that is, a psychological process that carries the same meaning, or function, in different societies but in culturally varying ways (e.g., Norenzayan & Heine, 2005).

At the same time, guided by claims about functional universality (e.g., Norenzayan & Heine, 2005) and the argument that emotions vary across cultures in ways that enable the individual to adapt to culturally specific social contexts (e.g., Mesquita et al., 2016), we further posit that there will be culture-specific variations in the influences of awe on the self. Given well documented differences in the self-construals of individuals from individualist and collectivist cultures (Markus & Kitayama, 1991; Oyserman, Coon, & Kemmelmeier, 2002; Shweder & Bourne, 1984; Triandis, 1989), we examined three kinds of cultural variation in the effect of awe upon the small self. First, we examined whether the *elicitors* of awe would vary across collectivist and individualist cultures, expecting more socially engaging elicitors to be more prominent in the former kind of cultures, and more individual focused elicitors in the United States (Uchida, Norasakkunkit, & Kitayama, 2004). Second, we examined cultural variations in the *magnitude* of the small self effect, guided by studies showing that components of emotion—such as the smile of joy—are intensified when consistent with cultural values or self-construals (Matsumoto & Ekman, 1989; Tsai & Chentsova-Dutton, 2003). Finally, we examined how the *content* of the small self effect might differ in collectivist and individualist cultures. Here the possibility is that although awe may function to integrate the individual into social collectives through a diminishing of the self, the content of the effect—for example, the kind of social network awe embeds the individual in—might vary in systematic ways. Guided by these concepts, we examined how awe and the small self effect vary in elicitors, magnitude, and content in collectivist and individualist cultures.

Present Investigation

In the current investigation, we tested our small self hypothesis across six studies that examined how awe experienced in daily life, in the lab, and in natural settings promotes collective engagement through a diminishing of the self. Our first hypothesis was that awe, but not other positive emotions—joy and amusement—will render the perceived self-size small (Hypothesis 1). In keeping with theoretical claims about how emotional experiences guide cognitive processes (e.g., Keltner & Horberg, 2015; Lerner, Li, Valdesolo, & Kassam, 2015), we predicted that the intensity of the subjective experience of awe would predict the reduction in perceived self-size (Hypothesis 2). Given functional analyses of awe, we predicted that awe would lead to a smaller self across different cultures (Hypothesis 3). Furthermore, we expected that awe, through diminished perceived self-size, would shift individuals' attention away from the self, and thus promote collective engagement (Hypothesis 4).

Finally, given the aforementioned analysis of culture and emotion, we predicted that the small self effect of awe would vary in three ways for people from collectivistic (East Asian) cultures and individualistic (United States) (Hypothesis 5). First, we predicted that the *elicitors* of awe would vary across the two cultures: among more interdependent Chinese participants, we expected awe to be experienced more frequently in response to another person, and for more independent U.S. participants, we expected awe to be more frequently elicited in response to themselves.

Regarding the *magnitude* of the small self effect, we tested competing predictions that derive from the finding that people from interdependent cultures tend to report a smaller perceived

self-size relative to those from independent cultures (Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009; Talhelm et al., 2014). On the one hand, one might expect individuals from interdependent cultures, predisposed to perceiving the self as small, to demonstrate an amplified effect of awe on diminished perceived self-size. On the other hand, individuals from independent cultures may begin with greater perceived self-size, and have greater room to move in the diminishing of self-size produced by awe. Across studies, we pitted these two predictions against one another.

Lastly, we expected culture to influence the *content* of how awe shapes the small self, namely in terms of the nature of the social networks the individual feels embedded in. Although people in all cultures show a preference for social integration (Baumeister & Leary, 1995; Fiske & Yamamoto, 2005), individuals from collectivist cultures seek security and strong ties with known others, whereas people from individualistic cultures tend to prefer a wider and more loosely connected social network, with ties to strangers as well as intimates (Fiske & Yamamoto, 2005; Klarin, Pororoković, Šašić, & Arnaudova, 2012; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988; Wheeler, Reis, & Bond, 1989). Given these cultural differences (Oyserman et al., 2002), we hypothesized that in collectivistic China, awe would strengthen the *intensity* of social ties for the individual, whereas in individualistic United States awe will increase the *number* of people perceived to be part of an individual's social network.

Study 1: Validating a Measurement Approach to Perceived Self-Size

Prominent in self-representation is the metaphorical size of the self-concept, which we will call perceived self-size. People often describe the self in metaphorical terms related to size: "I have a small ego"; "He has a big personality" (e.g., Lakoff & Johnson, 1980; Landau et al., 2011; Moser, 2007; Schlegel, Hicks, Arndt, & King, 2009). The same is true of self-relevant experiences: "I grew during that trying period." As widespread as references to perceived self-size are in natural language, and in accounts of awe, a valid measure of the construct is missing.

In Study 1, therefore, we validated measures of perceived self-size. We adapted two self-report items from studies that measured perceived smallness (Shiota et al., 2007). We also validated three neutral, language-free, symbolic measurements of perceived self-size, measures more amenable to cross-cultural research given that they skirt potential translation-based confounds (e.g., Sperber, Devellis, & Boehlecke, 1994) as well as biases toward the particular wording of items (e.g., Peng, Nisbett, & Wong, 1997). For purposes of construct validation, we examined the correlations between self-report and pictorial measures of perceived self-size and measures of self-esteem (Robins, Hendin, & Trzesniewski, 2001; Ronningstam, 2005), self-efficacy (Baldwin, Baldwin, & Ewald, 2006; Bandura, 1993), sense of power (Anderson, John, & Keltner, 2012), sociometric status (Anderson, Kraus, Galinsky, & Keltner, 2012; Shrauger & Schoeneman, 1979), and self-entitlement (Exline, Baumeister, Bushman, Campbell, & Finkel, 2004)—that have been shown previously to be associated with sense of self-size (Brown, 2006; Gruenewald, Kemeny, Aziz, & Fahey, 2004; Lindsay-Hartz, de Rivera, & Mascolo, 1995; Piff et al., 2015; Ronningstam, 2005; Tangney, Wagner, Fletcher, & Gramzow, 1992).

We expected that individuals of smaller perceived self-size would report lower self-esteem, efficacy, sense of power and subjective status, and being less entitled to valued resources than others (Piff et al., 2015). Lastly, we also obtained measures for participants' physical size to ascertain that metaphorical size is not simply a proxy for actual physical size.

Method

Participants. We recruited 212 American participants through Amazon's Mechanical Turk (MTurk) marketplace (90 men; $M = 38.58$ years, $SD = 12.98$; 78.8% Whites; 11.3% African Americans; 4.7% Asian; 2.4% Latino/Hispanic Americans; 1.9% Mixed Race; 0.5% Native American; 0.5% Other).

Measures and procedure. After giving consent, participants completed an online questionnaire including measures of perceived self-size, and then completed other self-related measures including self-esteem, subjective social status, sense of power, and self-entitlement.

Perceived self-size. In developing a 5-item questionnaire of perceived self-size, we adapted two self-report items from previous research (Shiota et al., 2007), so that they would capture the individual's perceived self-size on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Items included: "In general, I feel relatively small," "In general, I feel insignificant"; responses to the two items were reverse-scored. We also developed three pictorial measures of perceived self-size. Specifically, participants were presented with a series of seven circles, a selection of full body drawings, and a display of signatures (see Appendix A), and asked to select options that best represented their perceived self-size. The size of the circles, full body images and signatures increase linearly, creating three 7-point interval scales.

Self-esteem. We assessed self-esteem using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Individuals responded from 1 (*strongly disagree*) to 4 (*strongly agree*) to 10 items inquiring about their global self-esteem. A sample item is: "On the whole, I am satisfied with myself" ($M = 30.42$, $SD = 5.10$; $\alpha = .92$).

General self-efficacy. We assessed self-efficacy using the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995). Participants responded from 1 (*not at all true*) to 4 (*exactly true*) to 10 items. A sample item is: "I can always manage to solve difficult problems if I try hard enough" ($M = 30.43$, $SD = 6.56$; $\alpha = .91$).

Sociometric status. Sociometric status was assessed using the MacArthur Scale of Subjective Social Status (Adler, Epel, Castellazzo, & Ickovics, 2000; Goodman et al., 2001). Participants were presented with a picture of a 10-rung ladder and told that the top of the ladder represented individuals with the highest standing in their community and that the bottom of the ladder represented individuals with the lowest standing. They then indicated which rung of the ladder represented their standing in their community.

Sense of power. Participants responded from 1 (*strongly disagree*) to 7 (*strongly agree*) to 8 items measuring beliefs individuals hold regarding their power relative to others (Anderson et al., 2012). A sample item is: "I think I have a great deal of power" ($M = 36.97$, $SD = 9.33$; $\alpha = .91$).

Self-entitlement. Participants responded from 1 (*strongly disagree*) to 7 (*strongly agree*) to 9 items measuring the sense of being entitled to more valuable resources than others (Campbell,

Bonacci, Shelton, Exline, & Bushman, 2004). A sample item is: “I deserve more things in my life” ($M = 29.42$, $SD = 10.79$; $\alpha = .79$).

Height and weight. Participants rated their height according to the following scale: 1 = 4’5”–4’8”, 2 = 4’9”–5’2”, 3 = 5’3”–5’6”, 4 = 5’7”–6’0”, 5 = 6’1”–6’4”, 6 = 6’5”–6’8”, 7 = 6’9”–7’2”. The average rating was 3.63 ($SD = 0.87$); that is, the average height was between 5’3” to 6’0”. Participants also rated their weight according to the following scale: 1 = less than 90lb, 2 = 91lb–130lb, 3 = 131lb–170lb, 4 = 171lb–210lb, 5 = 211lb–250lb, 6 = 251lb–290lb, 7 = more than 291lb. The average rating was 3.58 ($SD = 1.04$); that is, the average weight was between 131lb to 160lb. Both height and weight were centered around the group mean to reflect participants’ height and weight relative to other group members. For both questions, participant also had the option to choose 8 (“I do not want to answer”).

Results and Discussion

The descriptive statistics for the five perceived self-size items are presented in Table 1. Principal components factor analysis of this scale yielded a one-factor solution (based on examination of the scree plot as well as on Kaiser’s rule that only factors with eigenvalues greater than 1 are extracted). The eigenvalue for Factor 1 was 3.22. This single unobserved factor accounted for 64.48% of the variance in the five items. Because factor coefficients are highly dependent on sample characteristics (Dawes, 1979; Wainer, 1976), the five items were summed to form a composite measure. The correlation between items combined using factor weights and items combined using unit weights was $r = 1.0$. The α coefficient for the composite measure was .86. One-factor solutions were obtained for female and male participants.

Turning to correlates of the small self (see Table 2), participants who reported a smaller self-size reported a lower sense of esteem, power, status, and self-efficacy, as well as reduced self-entitlement. More important, we also re-estimated the correlation between perceived self-size and self-entitlement with partial correlations (controlling for self-esteem, self-efficacy, sense of power, and subjective status) rather than zero-order correlations, but again the correlation coefficient differed significantly from zero, $r = .13$, $p = .05$, suggesting that perceived self-size and other related self-constructs are not redundant. Finally, perceived self-size did not correlate with physical size.

In summary, our 5-item, self-report, and pictorial measure of perceived self-size proved to be a coherent, internally consistent

measure, and in its patterns of correlations with other measures proved to be irreducible to other related constructs—for example, self-esteem, sense of power—nor the individual’s actual physical size.

Study 2: Daily Awe, the Small Self, and Culture

In Study 2, participants in China and the United States reported on their daily emotional experiences and perceived self-size in the context of everyday life (Bolger, Davis, & Rafaeli, 2003; Reis, 1994). These data allowed us to test our hypothesis that awe leads to a small self through various elicitors of awe including nature, which has been a focus in the field thus far (e.g., Rudd et al., 2012; Shiota et al., 2007; Valdesolo & Graham, 2014). We expected that daily experiences of awe would lead to diminished perceived self-size more so than joy, and that this effect would be true both in China and in the United States with variations in the elicitors of awe and the magnitude of the effect.

Method

Participants. The Chinese sample (CHN) consisted of 88 students at a major public university in Beijing, China who participated in exchange for ¥100 (\$15) compensation. To be included in our CHN sample, participants must have been born in an East Asian country and speak Mandarin as their first language. One participant who finished less than half of the entries was excluded. Four participants who failed to understand the definition of awe were excluded. The final sample included 83 CHN participants (28 men; $M = 18.84$ years, $SD = .99$ years).

The U.S. sample (US) consisted of 120 students at a major public West Coast University who participated in exchange for course credit or \$15 compensation. To be included in our U.S. sample, participants must have been born in the United States and not lived in a foreign country for more than 2 years. The 32 participants who failed to finish more than half of the entries were excluded. Five participants who failed to understand the definition of awe were also excluded from analysis. The final sample consisted of 83 U.S. participants (16 men; $M = 19.96$ years, $SD = 1.56$ years). The sample was ethnically diverse with 25.3% White, 39.8% Asian American, 13.3% Latino, and 21.6% African American, Native American, or another ethnicity.

Measures and procedure.

Defining awe for participants. Establishing cross-culturally equivalent meanings of emotion concepts is problematic, given the

Table 1
Inter-Item Correlation, Means, and SDs of Measures of Perceived Self-Size (Study 1)

Variables	1	2	3	4	5	Corrected item-total correlation
1. I feel relatively small	—					.69
2. I feel insignificant	.80**	—				.69
3. Symbolic self circle	.57**	.59**	—			.72
4. Full body image	.44**	.45**	.62**	—		.68
5. “Me” signature	.41**	.41**	.54**	.73**	—	.63
<i>M</i>	3.02	2.99	3.74	4.51	3.88	
<i>SD</i>	1.70	1.80	1.53	1.73	1.67	

Note. Items 1 and 2 were both reversed scored. Item-total correlations are corrected.

** $p < .01$.

Table 2
Descriptive Statistics and Correlations of Measures in Study 1

Variables	1	2	3	4	5	6	7	8
1. Perceive self-size	—							
2. General self-efficacy	.50**	—						
3. Self-esteem	.64**	.62**	—					
4. Sociometric status	.47**	.38**	.35**	—				
5. Sense of power	.61**	.65**	.69**	.49**	—			
6. Self-entitlement	.20**	.07	.09	.15*	.20**	—		
7. Height	.05						—	
8. Weight	-.001						.35**	—
<i>M</i>	3.63	30.42	30.43	4.85	36.97	29.42	3.63	3.62
<i>SD</i>	1.35	5.10	6.56	1.70	9.33	10.79	.87	1.12

Note. The larger score on perceived self-size indicates individual perceived self as larger.

** $p < .01$.

multiplicity of connotations across cultures of single words (e.g., Russell, 1989, 1994). To address this issue, before beginning the daily diary portion of the study, we oriented participants to an understanding of awe through a theoretical definition, exposure to a facial expression, and listening to a vocal burst of awe. Participants were first provided with a general description of awe¹ (derived from Keltner & Haidt, 2003): "People sometimes experience the emotion of 'awe' when they are in the presence of something that is so vast that their current understanding of the world, their surroundings, or themselves is challenged in some way." Participants then viewed a photograph of a facial expression associated with awe, which involves the gaze looking upward, the mouth open slightly, and slightly oblique eyebrows (Shiota, Campos, & Keltner, 2003). Finally, participants listened to a vocal burst—a brief vocalization produced to communicate awe—that has been found to communicate awe with remarkable fidelity in collectivistic and individualistic cultures (Cordaro et al., 2016). To provide equivalent instructions across the two cultures, all materials were translated into Mandarin and back-translated into English by two bilingual research assistants. In addition, four bilingual researchers (2 from China and 2 from the United States) read all the materials and made the final edits (Campbell, Brislin, Stewart, & Werner, 1970).

Daily diary. After being exposed to this definition of awe, participants completed the daily diary portion of the study. At the end of each day, participants were first asked whether they experienced awe that day and, if so, to describe it. If participants did not experience awe that day, they were asked if they experienced joy on that day and, if so, to describe it. If participants experienced neither awe nor joy, they were asked to write about something they wanted to share, which maintained their daily participation in the study (though these data were not included in analyses). Participants next reported on their perceived self-size during the experience they described. Reminders were sent out every night at 8:00 p.m. Diaries completed after 8:00 a.m. on the following day were excluded from analyses, since participants' reports might not accurately reflect their experiences that day. In total, the Chinese participants finished 1,154 diaries (492 were about an awe experience and 502 were about a joy experience) and the U.S. sample finished 1,129 diaries (312 were about an awe experience; 519 were about a joy experience).

Daily emotional experience. Participants also reported on the extent to which they felt a series of emotions that day—awe,

wonder, compassion, gratitude, love, pride, surprise, happiness, hope, amusement, joy, envy, shame, embarrassment, guilt, fear, anger, and sadness—on a 10-point Likert scale (1 = *not at all*, 10 = *extremely*).

Perceived self-size. To reduce potential translation-based confounds (e.g., Sperber et al., 1994) and to keep the daily diary brief, perceived self-size was assessed using a single item validated in Study 1—the 7-circle item.

Data coding and analysis.

Coding of awe elicitors. Two native English-speaking research assistants from the United States coded the primary elicitor of each awe narrative written by U.S. participants into one of nine mutually exclusive categories: (a) something in nature; (b) another person; (c) a piece of art or music; (d) a building or some aspect of architecture; (e) some kind of spiritual experience (religious or spiritual more broadly); (f) some kind of knowledge; (g) some kind of technology; (h) oneself; and (i) other. Similarly, two native Chinese-speaking research assistants from China coded the primary elicitors of all the Chinese awe narratives. All four coders were naïve to the hypotheses. The intercoder reliability (Cronbach's α) between the two English coders was .83, and it was .90 for the Chinese coders. For both cultures, a third bilingual coder read all the codes and settled discrepancies between the two coders.

Coding of the physical vastness of the elicitor. Coders were also trained to code each entry as including the presence or absence of perceived vastness of the elicitor (interrater reliability: CHN: $\alpha = .95$; US: $\alpha = .84$). An awe elicitor was coded as vast if it contained a physical element of vastness based on the situation. For example, a diary like the following

"I stumbled upon a Facebook post earlier today about the exploration of Mars. This idea just sparked me to ruminate on the possibilities of discovering newer planets outside of our own galaxy. Then I began to realize how big the universe is, how small and totally insignificant we are and that there are more stars in the universe than grains of sand on all the beaches and deserts of Earth. Its not my first awe experience with the vastness of the universe but a recurring one."

¹ Chinese participants received all information in person; participants in the United States were given the information online. To make the process equivalent between the two cultures, all information was presented in the exact same order and with the exact same instructions.

was coded as having an element of vastness. For both cultures, a third bilingual coder read all the codes and settled discrepancies between the two coders.

Results and Discussion

Elicitors of awe and perceived self-size. Figure 1a and 1b present the frequency with which each kind of awe elicitor was reported in China and the United States. Although interpersonal events and nature were the most common elicitors of awe in both cultures, several differences stand out and are in keeping with our hypothesis that culture would influence the elicitors of awe. First, the self was over 20 times more likely to elicit awe in the United States (8.01%) than in China (0.41%), $\chi^2 = 33.89$, $p < .001$, in keeping with the elicitor hypothesis. Second, Chinese participants (63.32%) reported significantly more interpersonal awe experiences over the 2-week period than did U.S. participants (49.36%), $\chi^2 = 15.22$, $p < .001$. Figure 1c and 1d present perceived self-size across elicitors of awe.² A 2 (culture: Eastern vs. Western) \times 9 (different awe elicitors) analysis of variance (ANOVA) comparing different awe-eliciting situations' influence on perceived self-size revealed that when compared with other awe-eliciting situations, spiritual experiences of awe led participants from both cultures to perceive themselves as smaller, $F(1, 774) = 2.48$, $p = .009$. Neither the culture main effect nor the interaction between culture and awe elicitor was significant.

The small self in daily life. To model the association between perceived self-size and emotion (awe vs. joy) within the two cultures (China vs. United States) over time, we treated perceived self-size as a dependent variable assessed at 14 time points in a factorial linear mixed model. For modeling purposes, culture, emotion, and the interaction between culture and emotion were treated as fixed covariates. Emotion and the intercept were treated as random effects because we assumed awe-inspiring and joyful experiences would arise randomly, and their covariance was modeled as a variance components matrix. We assessed fixed effects for these variables and their interaction using SPSS Mixed Models with restricted maximum likelihood estimation. Of primary interests in these analyses were the main effects of culture and emotion on perceived self-size.

In keeping with our small self hypothesis, the main effect of emotion was significant in the full sample with China and the United States combined, $F(1, 158) = 41.20$, $p < .001$: on days when participants reported feeling awe they perceived themselves to be smaller ($M = 3.61$, $SD = 0.10$) than on days when they reported experiencing joy ($M = 4.30$, $SD = 0.09$). This result is portrayed in Figure 2. The main effect of culture was not significant, $F(1, 166) = 1.65$, ns. The interaction between culture and emotion was marginally significant, $F(1, 158) = 3.59$, $p = .06$. In keeping with Hypothesis 3, follow-up simple effect tests revealed that within both cultures, participants felt significantly smaller during awe (CHN: $M = 3.41$, $SD = 0.13$; US: $M = 3.81$, $SD = 0.14$) as opposed to joy (CHN: $M = 4.30$, $SD = 0.13$; US: $M = 4.30$, $SD = 0.13$). Consistent with our prediction regarding cultural variations in magnitude, this effect tended to be stronger among CHN participants ($b = .92$, $t(691) = 8.69$, $p < .001$) compared with U.S. participants ($b = .48$, $t(946) = 4.10$, $p < .001$).

Is the effect of awe on perceived self-size simply due to general positive or negative emotion during the day? To rule out these

possibilities, we first controlled for general daily positivity—averaging participants' daily experience of compassion, gratitude, love, pride, surprise, happiness, hope, amusement, and joy—and measured awe's effect on small self. As predicted, the effect held after controlling for daily positivity, $b = -.84$, $p < .001$. We also controlled for general daily negativity—averaging participants' daily experience of envy, shame, embarrassment, guilt, fear, anger, and sadness—and found the effect of awe on perceived self-size still held, $b = -.70$, $p < .001$.

Finally, to rule out the possibility that awe's effect on the small self was produced by the physical vastness of the elicitor, we compared individuals' reported perceived self-size in response to elicitors which were vast with elicitors which were not physically vast. This comparison was not significant, $b = .133$, $p = .288$, suggesting that physical vastness of the elicitor does not determine the effect of small self.

In summary, supporting our small self hypothesis, on days when participants experienced awe, their perceived self-size was smaller than on days when they experienced joy, even after controlling for general positivity and negativity. Consistent with our functional universality hypothesis, this effect held across elicitors of awe and the two cultures. At the same time, culture influenced the elicitors of awe and the magnitude of the small self effect, in line with theorizing about the cultural shaping of emotion.

Study 2, however, was limited in various respects. This study relied on retrospective self-reports, which may reflect participants' lay theories about awe and the small self rather than actual causal relations between awe and the small self (Nisbett & Wilson, 1977; Parkinson & Manstead, 1992). Also noteworthy is that the comparisons between awe and joy were not based on random assignment. In light of these concerns, in the following four studies we turned to experimental techniques, looking at people's perceived self-size in awe-inspiring or pleasurable recreational settings (Study 3), and after experiencing awe in the more controlled conditions of the lab (Studies 4, 5, and 6).

Study 3: Natural Awe, the Small Self, and Cultural Variations

In Study 3, we captured tourists' perceived self-size while feeling awe at Yosemite National Park, nominated as one of the most awe-inspiring places in the world, or other positive emotions at Fisherman's Wharf in San Francisco, sampling people of different cultural identities (Alexander, 2016). Mindful of cultural biases introduced by translation (Sperber et al., 1994) and Likert scales (Heine, Lehman, Peng, & Greenholtz, 2002; Peng et al., 1997), we modified the pictorial measure from our validated small self scale—by directly gathering self-image drawings (Cramer-Azima, 1956; Machover, 1949) and “self” signature size—to assess perceived self-size. Building on the results of Study 2, we also examined whether or not the small self triggered by awe is accompanied by reduced feelings of status. Finally, to move beyond college samples (Henrich, Heine, & Norenzayan, 2010), we sam-

² It is important to note that within each culture, some awe eliciting situations occurred at extremely low frequency. For example, only 2 diaries out of the total 492 Chinese awe diaries referred to the “self” as elicitors. Caution must be taken when interpreting from the descriptive data as sample size is not equally distributed.

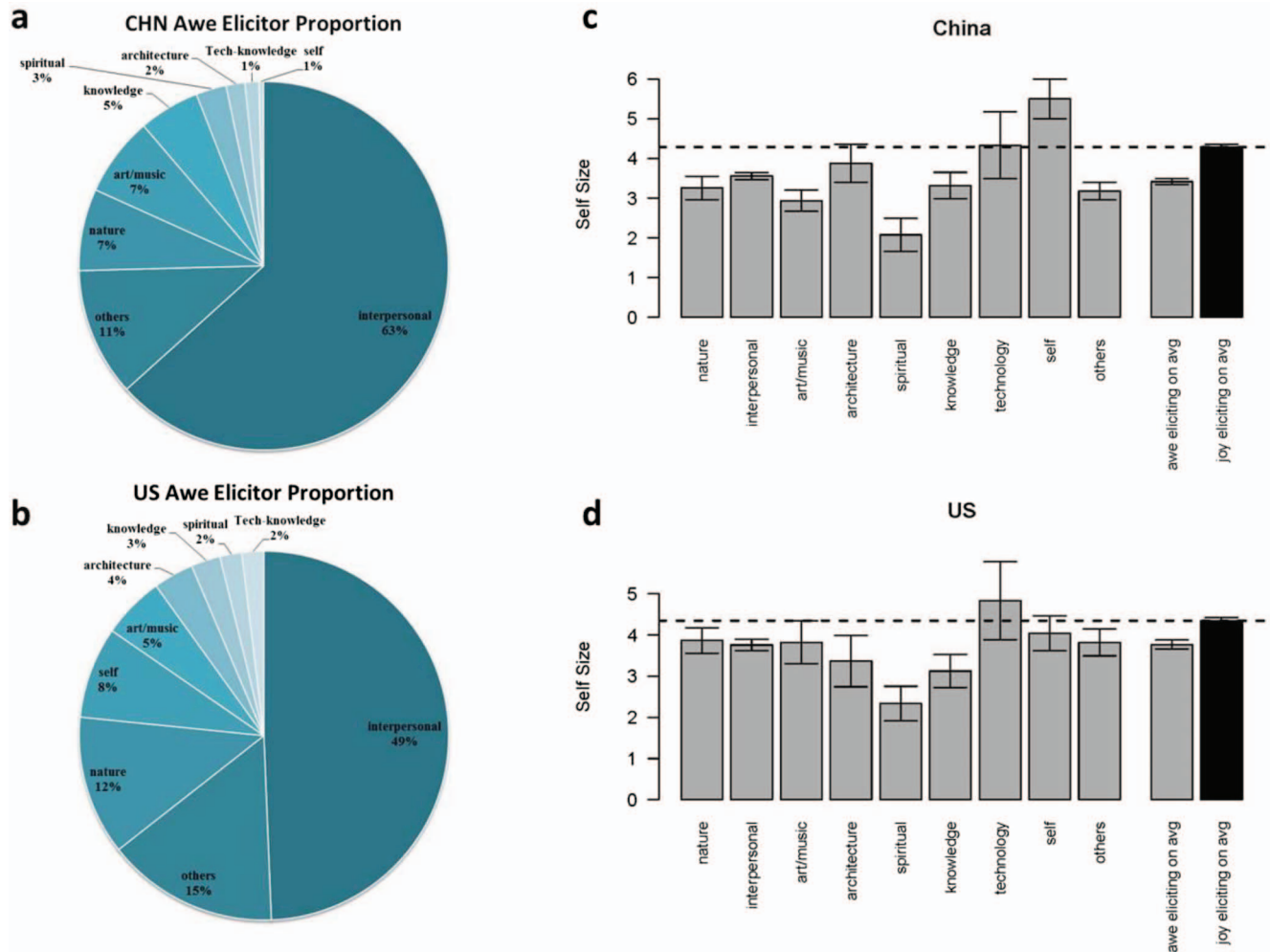


Figure 1. Elicitors of awe and self-size. (a and b) The frequency of different types of awe among Chinese and the U.S. participants. (c and d) The reported self-size in response to different types of awe elicitors for Chinese and the U.S. participants (Study 2). See the online article for the color version of this figure.

pled adults of different ages, cultural identities, and socioeconomic backgrounds, to provide more robust evidence for the small self hypothesis.

Method

Participants. The full sample consisted of 1,178 tourists at Tunnel View Point at Yosemite National Park or Fisherman's Wharf in San Francisco. Participants at Yosemite were 633 tourists (314 men) from 42 countries of origin: 47.55% North American, 28.91% Asian, 21.01% European, 1.7% South American, and 0.6% Oceania countries. Mean age of the Yosemite sample was 32.46 years (range: 18–74). Participants at Fisherman's Wharf were 545 tourists (255 men) from 34 countries of origin: 47.71% North American, 20.55% Asian, 24.77% European, 1.3% South American, and 5.7% Oceania countries. Mean age of the Fisherman's Wharf sample was 37.39 years (range: 18–92).

Measures and procedure. At each location, participants were approached by research assistants who asked if they would be

willing to participate in a short survey³ (see Figure 3a and 3b for pictures of where the surveys were completed). To accommodate the language preference of tourists at each location, all measures were offered in English, Mandarin Chinese, Japanese, or Korean.⁴ All measures were first prepared in English and then translated into the three alternative languages. For each of these languages, a research assistant bilingual in English and the alternative language translated the measure. The measures were then back-translated

³ Of the 633 participants recruited, 63.19% of participants reported that this was their first time visiting Tunnel View Point. Participants reported an average of 1.98 visits to Tunnel View Point before this trip ($M = 1.98$, $SD = 13.29$). Of the 545 participants, 40.92% of participants reported that this was their first time visiting Fisherman's Wharf. Participants reported an average of 4.04 visits to Fisherman's Wharf before this trip ($M = 4.04$, $SD = 11.79$).

⁴ Although the majority of tourists at each location were fluent in English, a great proportion of tourists from East Asian countries could not speak nor read English and, therefore, required translation to their native language (see Blotkamp, Meldrum, Morse, & Hollenhorst, 2010).

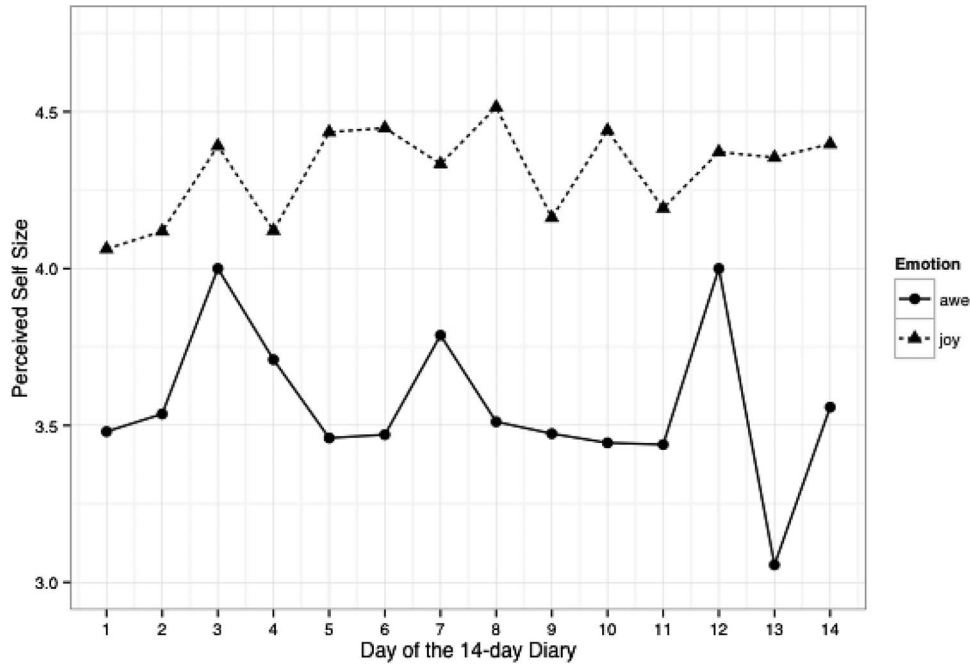


Figure 2. Influence of daily awe and joy upon participants' reported perceived self-size (Study 2).

into English by a second research assistant for each language. Translation discrepancies were resolved through discussion with the translators and the authors.

Emotion. Participants reported the degree to which they felt “awe,” “joy,” “pride,” “sad,” “fear,” and “tired”) on a 7-point scale from 1 (*not at all*) to 7 (*extremely*).

Perceived self-size. The perceived self-size question was the 7-circle item used in Study 1.

Self-image drawing and “Me” signature. Participants completed two modified assessments of perceived self-size validated in Study 1. After finishing the survey, participants first drew a picture of themselves on the back of the paper on which they completed their questionnaires (for similar measures, see Goodenough, 1926; Machover, 1949). Then, participants “signed” their picture by writing a “Me” on the page (Chinese, Japanese, and Korean people were instructed to write “我,” “私,” or “나” instead). To orient participants to a similar visual context for their drawing, they were given a page of 23×40 cubic graph paper that included grass at the bottom of the page and a sun at the top-right corner (for sample drawings see Figure 3c and 3d). The instructions for this drawing exercise were as follows:

Now, can you help us draw a picture of yourself on the back of the paper? Think about your current self at Tunnel View [Fisherman’s Wharf]. You can draw anything you want. You can also add other people or objects to that. When you finish drawing, please write a “Me” next to your self image to sign for it.

To measure perceived self-size, we recorded the number of squares included within the figure of the participant’s drawn self. This number included any squares the pencil line touched, and blank squares included in the body of the figure (e.g., a round circle perceived to be a head would be counted as every square the

pencil line crossed and the squares contained within the circle). Similarly, the sizes of participants’ “Me” signatures were derived following the same metric. The drawings were coded by three research assistants who were naïve to the experiment’s hypotheses.

Subjective social status. Subjective social status was assessed using the MacArthur Scale of Subjective Social Status (Adler et al., 2000; Goodman et al., 2001).

Results and Discussion

Emotions experienced at Yosemite and Fisherman’s Wharf. Independent samples *t* test showed that compared with the tourists at Fisherman’s Wharf ($M = 3.21$, $SD = 1.72$), people at Yosemite National Park ($M = 5.38$, $SD = 1.63$) experienced significantly more awe, $t(1,124) = 22.09$, $p < .001$, $d = 1.32$, $r = .6$. For all other emotions assessed, there was either no significant difference (pride and sad) in the experiences of people at Yosemite National Park and Fisherman’s Wharf, or significant differences (joy, fear, and tired) with small to moderate effect sizes. These results are presented in Table 3.

Perceived self-size at Yosemite and Fisherman’s Wharf. In keeping with Hypothesis 1, compared with the tourists at Fisherman’s Wharf, participants at Yosemite chose smaller circles to represent their current self (Fisherman’s Wharf: $M = 5.20$, $SE = 0.05$; Yosemite: $M = 3.96$, $SE = 0.08$), $t(1,076) = -13.07$, $p < .001$, $d = -0.80$. Furthermore, participants at Yosemite ($M = 43.00$, $SE = 2.12$) drew self-images that were nearly 33% smaller than those drawn by people at Fisherman’s Wharf ($M = 64.54$, $SE = 2.23$), $t(1,105) = -7.00$, $p < .001$, $d = -0.42$. When asked to sign a “Me” next to their self-image, participants at Yosemite produced a smaller “Me” compared with participants’ signatures at Fisherman’s Wharf (Yosemite: $M = 5.82$, $SE = 0.23$; Fisherman’s

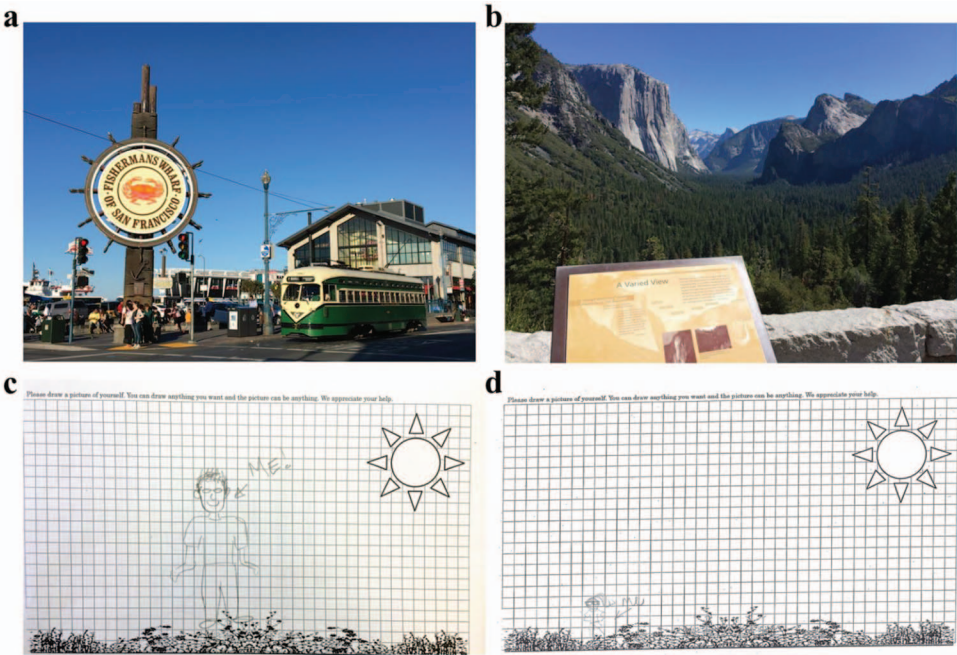


Figure 3. (a and b) View of the Fisherman's Wharf and view of Yosemite National Park. (c and d) Participants' self-image drawing randomly selected out of all drawn at the two locations (Study 3). See the online article for the color version of this figure.

Wharf: $M = 7.69$, $SE = 0.25$), $t(948) = -5.58$, $p < .001$, $d = -0.36$. These results are presented in Table 4.

We next tested whether the small self effect might be confounded by other variables. For instance, this effect could be accounted for by participants' familiarity with the place or by demographic variables (e.g., age, gender). We tested this in the context of an ANCOVA with location as independent variable and participants' age, gender (female = 1, male = 2), and the number of time(s) participants had visited the location before the study as covariates. For the dependent variable, we created a composite of: (a) the size of the circle participants selected; (b) the size of participants' self-image drawing; and (c) the size of participants' "Me" signature, by standardizing and calculating the sum of these three measures (Cronbach's $\alpha = .51$). The analysis revealed that after controlling for demographic variables and participants' familiarity with the locale, the main effect of location still remains significant, $F(1, 885) = 138.35$, $p < .001$, $\eta_p^2 = .14$.

Consistent with Hypothesis 2, across two locations, participants' reported awe intensity was significantly correlated with the com-

posite index of perceived self-size, $r = -.23$, $p < .001$. To examine awe's unique impact on the small self, we ran a regression model in which we entered awe together with all the other emotions—joy, pride, sad, fear, and tired—simultaneously as the predictor of the composite index of perceived self-size. Even after controlling for all the other emotions, awe still significantly predicted a sense of smallness, $b = -.28$, $SE = 0.04$, $p < .001$. Aside from pride, which predicted a larger perceived self-size ($b = .19$), no other emotion predicted perceived self-size.

Subjective social status at Yosemite National Park and Fisherman's Wharf. An independent samples t test revealed that people at Yosemite and Fisherman's Wharf reported an equivalent social status (Yosemite: $M = 6.32$, $SE = 0.08$; Fisherman's Wharf: $M = 6.39$, $SE = 0.07$), $t(1,174) = -0.65$, $p = .52$, suggesting that while awe leads people to sense that their self is smaller, it does not alter their perceived rank.

Awe, perceived self-size, and culture. To test our hypotheses concerning universality and cultural variations, we grouped participants by continents according to their reported home

Table 3
Participants' Emotional Experience at Fisherman's Wharf and Yosemite National Park (Study 3)

	Awe	Joy	Pride	Fear	Sad	Tired
Yosemite ($N = 628$)	5.38 (1.63)	5.42 (1.35)	3.92 (1.88)	1.83 (1.27)	1.33 (.85)	2.26 (1.51)
Fisherman's Wharf ($N = 545$)	3.21 (1.72)	5.18 (1.36)	3.81 (1.71)	1.55 (1.08)	1.41 (.93)	2.93 (1.67)
t	22.19***	3.06**	1.09	4.13***	-1.32	-7.10***
d	1.32	.18	.07	.24	-.08	-.43

Note. Each mean is followed by the corresponding SD in parentheses.
** $p < .01$. *** $p < .001$.

Table 4

Participants' Perceived Self-Size at Fisherman's Wharf and Yosemite National Park (Study 3)

Perceived self-size indexes	All participants		North Americans		Europe participants		Asia participants	
	Yosemite	Fisherman's Wharf	Yosemite	Fisherman's Wharf	Yosemite	Fisherman's Wharf	Yosemite	Fisherman's Wharf
Circle selection	3.96 (.08)	5.20 (.05)	3.95 (.12)	5.38 (.07)	3.77 (.17)	5.24 (.10)	4.08 (.14)	4.69 (.13)
Drawn self-image size	43.00 (2.12)	64.54 (2.23)	43.59 (2.95)	64.62 (3.40)	38.97 (4.10)	60.12 (3.60)	46.18 (4.60)	69.22 (5.56)
"Me" signature size	5.82 (.23)	7.69 (.25)	5.54 (.28)	7.61 (.33)	4.68 (.34)	7.45 (.53)	7.36 (.57)	8.09 (.56)
Composite index	-.82 (.09)	.81 (.09)	-.88 (.13)	.89 (.13)	-1.24 (.16)	.68 (.18)	-.37 (.19)	.69 (.17)

Note. Each mean is followed by the corresponding *SE* in parentheses.

countries, yielding substantial samples from Asia (Yosemite: $N = 182$; Fisherman's Wharf: $N = 112$), North America (Yosemite: $N = 301$; Fisherman's Wharf: $N = 260$), and Europe (Yosemite: $N = 133$; Fisherman's Wharf: $N = 135$). The sample sizes for Oceania and South America were too small (fewer than 10 people for some cells) to analyze. Independent samples t test analyses revealed that participants from the three cultures experienced similar levels of joy, pride, fear, sad and tired at Fisherman's Wharf and Yosemite (see Figure 4), and

that awe was experienced with greater intensity at Yosemite by participants from all cultural backgrounds (Asian: $t(290) = 7.22, p < .001, d = 0.85$; European: $t(253) = 12.45, p < .001, d = 1.57$; North American: $t(456) = 20.35, p < .001, d = 1.89$). The intensity of awe reported at Yosemite varied across cultures, $F(2, 613) = 47.65, p < .001, \eta_p^2 = .14$. A planned comparison (coded as Asia = -2, Europe = 1, North America = 1) revealed that compared with the participants from Asia ($M = 4.51, SE = 0.15$), participants from Europe ($M = 5.52,$

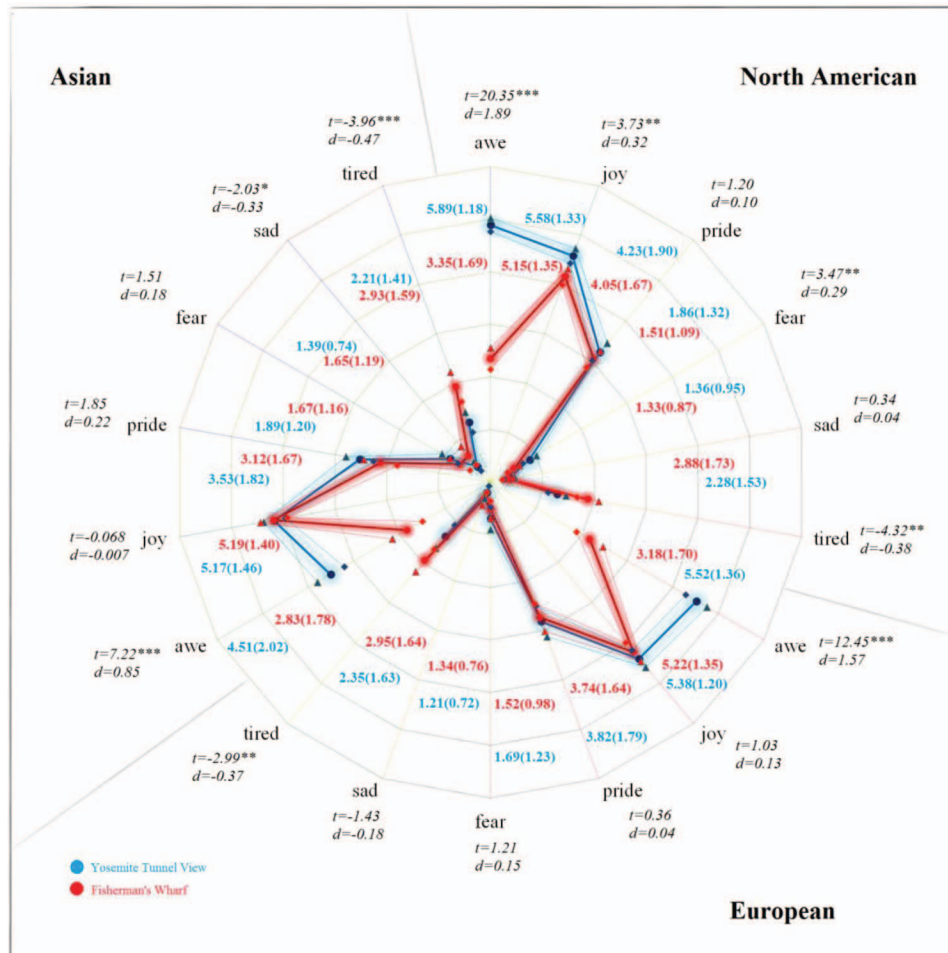


Figure 4. Participants' emotional experience at Yosemite National Park and Fisherman's Wharf (Study 3). See the online article for the color version of this figure.

$SE = 0.12$) and North America reported more intense awe experience ($M = 5.58$, $SE = 0.07$) at Yosemite, $t(611) = 8.72$, $p < .001$.

A 3 (Continent: Asia vs. Europe vs. North America) \times 2 (Location: Yosemite vs. Fisherman's Wharf) ANOVA was conducted with the composite index of perceived self-size as the dependent variable. In addition to the significant location effect on perceived self-size, $F(1, 893) = 134.65$, $p < .001$, $\eta_p^2 = .13$, participants' continent significantly interacted with location, $F(2, 893) = 3.40$, $p = .03$, $\eta_p^2 = .01$. In keeping with Hypothesis 3, simple effect analyses revealed that participants all perceived themselves as smaller at Yosemite. Again, however, culture influenced the magnitude of the small self effect, although in a different pattern from Study 2: the self-size difference was larger for North Americans (North American: $F(1, 893) = 98.01$, $p < .001$, $\eta_p^2 = .10$) and smaller among Asians (Asian: $F(1, 893) = 14.27$, $p < .001$, $\eta_p^2 = .02$).

In Study 3, in the awesome setting of Yosemite, participants reported a smaller self-size, drew a smaller self-image, and wrote smaller letters in signing "Me," than at Fisherman's Wharf, in keeping with Hypothesis 1. The intensity of current feelings of awe, even after controlling for all other emotions, significantly predicted the magnitude of the small self effect (Hypothesis 2). Furthermore, the influence of awe upon the diminished self replicated across participants from North America, Europe, and East Asian countries (Hypothesis 3). Finally, in keeping with Hypothesis 5, culture moderated the effects of awe upon the small self but in a different pattern from Study 2: the experience of awe in the presence of natural wonder had a greater effect on rendering the self small for individuals from individualistic cultures as opposed to collectivistic, East Asian cultures. That Yosemite produced greater shifts toward a small self for participants from the United States could be the result of several factors. Most obviously, it is important to note that U.S. participants reported more awe than individuals from other cultures. It is also plausible that U.S. participants find nature to be a more reliable elicitor of prototypical experiences of awe, which include the small self, than participants from East Asian cultures. On this possibility, it is worth noting that in the diary data from Study 2, nature was reported as an elicitor of awe more commonly for U.S. participants than Chinese participants.

In our next two studies, we turned to more tightly controlled experiments to control for potential confounding factors in the previous studies (e.g., culture-related differences in social contexts in Study 2 and contextual differences in the field of vision in Study 3). Also, we measured perceived self-size both before and after an awe induction (in Study 3 we had no baseline measures for perceived self-size and thus no direct measure of awe's effect on shifting perceived self-size).

Study 4: Awe in the Lab, the Small Self, and Culture

In Study 4, participants from China and the United States reported their self-size before and after an experience of awe produced by viewing images from the natural world, or after watching a video that elicited amusement, a high arousal, positive emotion also related to changes in knowledge about the current context.

Method

Participants. The Chinese sample (CHN) consisted of 59 (21 men; $M = 18.90$ years, $SD = 1.03$ years) undergraduate students at a major public university in Beijing who participated in exchange for optional course credit. The U.S. sample (US) consisted of 60 (21 men; $M = 22.75$ years, $SD = 5.66$ years) White undergraduate students at a major public West Coast University in the United States who participated in exchange for optional course credit. All participants gave written informed consent according to the guidelines of the local research ethics committee.

Measures and procedure. The experiment used a 2 (culture: Eastern vs. Western) \times 2 (emotion: awe vs. amusement) \times 2 (time: pre or post film clip assessment of perceived self-size) mixed design. Culture and emotion condition varied between subjects whereas time varied within subject. The dependent variables were perceived self-size and subjective social status.

Participants were invited to participate in a study of emotional experience. Upon arrival, participants were seated in individual testing cubicles where they completed a short survey that included measures of perceived self-size and subjective social status, watched a video designed to elicit one of the two target emotions, and finally filled out the measures of perceived self-size and subjective social status again. The same method of translation was used as in the prior studies. All stimuli were viewed on a 22 in. monitor with resolution of $1,680 \times 1,050$ and 75 Hz refresh rate.

Self-size. The same circle measure was used as in Studies 1, 2, and 3.

Subjective social status. The same ladder rank measure was used as in Studies 1 and 3.

Elicitation of awe or amusement. Participants were randomly assigned to watch either an awe-eliciting or amusement-eliciting video used in past research (Valdesolo & Graham, 2014). The awe-eliciting video was a 5-min montage of clips from the BBC's *Planet Earth* that depicted aerial shots of avalanches, waterfalls, mountains, oceans, and forests. The amusement-eliciting video was a 5-min montage of clips from the BBC's *Walk on the Wild Side* that depicted wild animals from various ecosystems, whose voices were overdubbed by actors engaging in funny conversations in their respective natural environments.

Emotion. Participants reported the degree to which they felt each of the six emotions while watching the video ("amusement," "happiness," "awe," "fear," "anger," and "disgust") on a 7-point scale (1 = *not at all*, 7 = *extremely*).

Results and Discussion

Manipulation checks. Participants who watched the 5-min awe clip felt more awe ($M = 6.17$, $SD = 1.29$) than participants who watched the amusement-eliciting video ($M = 2.85$, $SD = 1.93$), $F(1, 117) = 121.38$, $p < .001$, $\eta_p^2 = .51$, who reported more amusement ($M = 5.55$, $SD = 1.49$) compared with those in the awe condition ($M = 4.46$, $SD = 1.76$), $F(1, 117) = 13.60$, $p < .001$, $\eta_p^2 = .10$.

Change in perceived self-size. To examine the interaction between culture, emotion, and change in perceived self-size, a 2 (culture: Eastern vs. Western) \times 2 (emotion: awe vs. amusement) \times 2 (time: pre or post film clip assessment of perceived self-size) multivariate ANOVA (MANOVA) was conducted. Results yielded a significant interaction between emotion and time,

$F(1, 115) = 13.23, p < .001, \eta_p^2 = .10$. Simple effect analyses of this interaction revealed that, in keeping with our first hypothesis, after watching the awe-inducing video, participants' perceived self-size ($M = 3.75, SD = 0.20$) was significantly smaller than before watching the video ($M = 4.41, SD = 0.17$), $F(1, 117) = 16.2, p < .001, \eta_p^2 = .12$. On the other hand, after watching the amusement video, participants' perceived self-size did not change, $F(1, 117) = 1.21, p = .26$. Culture did not yield any main effect on perceived self-size nor interact with emotion—both Chinese and the U.S. participants reported smaller self-size during their awe experience, in line with Hypothesis 3.

Supporting Hypothesis 2, across conditions participants' self-reports of awe were significantly correlated with their perceived self-size change (a difference score calculated by subtracting their perceived self-size after the video from perceived self-size before the video), $r = -.27, p = .003$. More important, the same regression analysis as in Study 3 revealed that after controlling for other emotions, awe was the only emotion that predicted a change in perceived self-size, $b = -.25, SE = 0.06, p = .02$.

Change in perceived social status. A 2 (culture: Eastern vs. Western) \times 2 (emotion: awe vs. amusement) \times 2 (time: pre or post film clip assessment of perceived social status) MANOVA examining participants' self-reported status revealed a significant interaction between emotion and time, $F(1, 115) = 9.75, p = .002, \eta_p^2 = .08$. Simple effect analyses of this interaction revealed that participants led to feel awe did not differ in their sense of status before watching the video ($M_{\text{before}} = 6.01, SE = 0.21$) versus after they watched the video ($M_{\text{after}} = 5.78, SE = 0.23$), $F(1, 117) = 1.91, p = .17$. By contrast, amusement led participants to report a higher sense of status after relative to before ($M_{\text{before}} = 6.13, SE = 0.21$ and $M_{\text{after}} = 6.62, SE = 0.23$), $F(1, 117) = 9.36, p = .003, \eta_p^2 = .07$.

By measuring participants' reported self-size before and after their emotional experience, Study 4 demonstrated that awe reduced perceived self-size, and feelings of awe but not other positive emotions, predicted reductions in self-size. Once again, awe led to a reduction in perceived self-size but not perceived rank, and these findings were observed both in China and the United States. There was no evidence of culture influencing the magnitude of the small self effect of awe in this study.

Study 5: Awe, the Small Self, and Embedding in Social Networks

In our studies thus far, we have not established whether the influence of awe on perceived self-size generalizes to perceptions of other people. The vastness that triggers awe, which often transcends the human scale, may diminish the perceived size of other people, social groups, and larger social collectives. However, in keeping with our hypothesis that awe, through the small self, shifts attention to the social collective, we expected that awe would only influence perceived self-size but not generalized perception of others. To address these competing possibilities, in Study 5 participants drew their entire social networks (Kitayama et al., 2009), a method that provides a neutral and language-free measure of perceived self-size, perceptions of other peoples' sizes, and one instantiation—social network size—of collective engagement.

In Study 5 we also aimed to provide the first evidence that awe enhances people's collective engagement (Hypothesis 4). In past

studies, two indexes have been used to measure people's representations of their collective engagement: the number of people the individual affiliates with (Bernard et al., 1990; Dunbar, 1996; Dunbar & Spoors, 1995; Hill & Dunbar, 2003) and the psychological distance between the individual and others (Aron, Aron, & Smollan, 1992; Markus & Kitayama, 2010). Given that individuals' communal sense changes according to culture, context and affective state (e.g., Reis & Shaver, 1988; Talhelm et al., 2014; Waugh & Fredrickson, 2006), these representations are known to fluctuate. Guided by the social functional approach and the universal need for social integration (Baumeister & Leary, 1995; Fiske & Yamamoto, 2005), we expected that awe, by rendering the self smaller, would enhance individuals' collective orientation in both cultures. Further, given how collectivism is thought to manifest differently in Western and Eastern Asian cultures (Fiske & Yamamoto, 2005; Klarin et al., 2012; Oyserman et al., 2002; Triandis et al., 1988; Wheeler et al., 1989), we expected the content of this orientation to differ in Western and Eastern Asian cultures. For individuals from collectivistic China who seek intimate relation with secure and strong connections, we expected awe to strengthen the intensity of social ties for the individual; whereas for individuals from the individualistic United States who prefers wider and more loosely connected networks, awe was expected to increase the number of people perceived to be part of individual's social network.

Method

Participants. The Chinese sample (CHN) consisted of 90 students (21 men; $M = 18.79$ years, $SD = 2.31$ years) at a major public university in Beijing, China, who participated in exchange for course credit. To be included in this sample, participants must have been born in an East Asian country and speak Mandarin as their first language.

The U.S. sample (US) consisted of 90 students (19 men; $M = 21.00$ years, $SD = 3.25$ years) at a major public West Coast University in the United States who participated in exchange for course credit. To be included in this sample, participants must have been born in the United States and not lived in a foreign country for more than 2 years. The sample was ethnically diverse with 38.9% White, 31.1% Asian American, 13.3% Latino, 2.2% African American, and 12.2% mixed or other ethnicity.

Measures and procedure.

Elicitation of awe or amusement. Participants were randomly assigned to watch either the 5-min awe-inducing video or the 5-min amusement-inducing video used in Study 4.

Symbolic social network drawing. Participants were instructed to draw circles to designate the arrangement of people in their current social network including themselves (Kitayama et al., 2009). In the middle of one of the circles, each participant was instructed to write "Me" to designate the circle that represented himself or herself. In the other circles, participants wrote two letters to indicate the current location of that particular individual (e.g., "CA" if the person was currently in California). They were given 5 min to complete the task.

Emotions. Participants reported the degree to which they felt each of seven emotions while watching the video ("amusement,"

“happiness,” “awe,” “fear,” “sadness,” “anger,” and “disgust”) on a 7-point scale from 1 “not at all” to 7 “extremely.”

Data coding and analysis.

Perceived self-size. Participants’ perceived self-size was assessed by measuring the diameter (in centimeters) of the circle drawn to represent themselves.

Perception of the size of others. The perceived size of other members in the participants’ social network was assessed by measuring the diameter (in centimeters) of the circles drawn to represent others, and then computing the mean of these diameters.

Number of social ties and psychological distance. The number of social ties was measured by counting the number of circles other than “Me” drawn. The psychological distance was measured by averaging distances between the “Me” circle and other circles drawn to represent other people in the network.

Results and Discussion

Perceived self-size and awe experience. Consistent with previous research (Kitayama et al., 2009; Talhelm et al., 2014), a 2 (culture: Western vs. Eastern) \times 2 (priming: awe vs. amusement) \times 2 (perceived size: self vs. other) MANOVA, treating culture and emotion as between-subjects variables, revealed a significant interaction between culture and perceived size, $F(1, 176) = 5.16, p = .02, \eta_p^2 = .03$. Simple effect analyses revealed that although people from both cultures drew larger self-circles compared with other-circles, this self-inflation effect was larger among the U.S. participants $F(1, 178) = 35.14, p < .001, \eta_p^2 = .16$, compared with the CHN participants, $F(1, 178) = 7.68, p = .006, \eta_p^2 = .04$.

In keeping with our small self hypothesis, we found a significant interaction between emotion and perceived size, $F(1, 176) = 8.15, p = .005, \eta_p^2 = .04$ (see Figure 5). Simple effect analyses of this interaction revealed that after watching the awe-inducing video, participants’ drawn self-size ($M = 20.48, SE = 0.75$) was signif-

icantly smaller than those who watched the amusement-inducing video ($M = 23.79, SE = 0.57, F(1, 178) = 12.35, p = .001, \eta_p^2 = .07$). On the other hand, participants’ perceived other-size did not change after they watched the awe video (awe condition: $M = 19.04, SE = 0.62$; amusement condition: $M = 19.94, SE = 0.57, F(1, 178) = 1.13, p = .29$). Furthermore, culture did not moderate this interaction, $F(1, 178) = .08, p = .77$; the small self effect was observed in both China and the United States.

Number of social ties. To examine our predictions concerning cultural influences upon the content of the small self effect, we first conducted a 2 (culture: Eastern vs. Western) \times 2 (priming: awe vs. amusement) ANOVA treating the total number of circles representing other people in each social network as the dependent variable. Results revealed a significant main effect of culture, $F(1, 176) = 17.16, p < .001, \eta_p^2 = .09$. Compared with U.S. participants ($M = 17.44, SE = 1.11$), CHN participants included fewer others in their social network ($M = 10.93, SE = 1.11$). Further, in keeping with our content hypothesis, culture significantly interacted with emotion, $F(1, 176) = 5.38, p = .02, \eta_p^2 = .03$. Simple effect analyses indicated that among U.S. participants, experiencing awe ($M = 20.24, SE = 2.37$) led to a larger social network with more others compared with experiencing amusement ($M = 14.64, SE = 1.21, F(1, 176) = 6.35, p = .01, \eta_p^2 = .03$). Among CHN participants, experiencing awe did not significantly change the social network size (awe condition: $M = 10.09, SE = 1.12$; amusement condition: $M = 11.78, SE = 1.24, F(1, 176) = 0.58, p = .44$).

Psychological distance. To test the second prediction related to cultural variations, we conducted a 2 (culture: Eastern vs. Western) \times 2 (priming: awe vs. amusement) ANOVA. Results revealed a main effect of culture, $F(1, 176) = 61.41, p < .001, \eta_p^2 = .26$. Compared with U.S. participants ($M = 57.38, SE = 1.87$), CHN participants drew social networks with closer distances between the circles drawn to represent self and other ($M =$

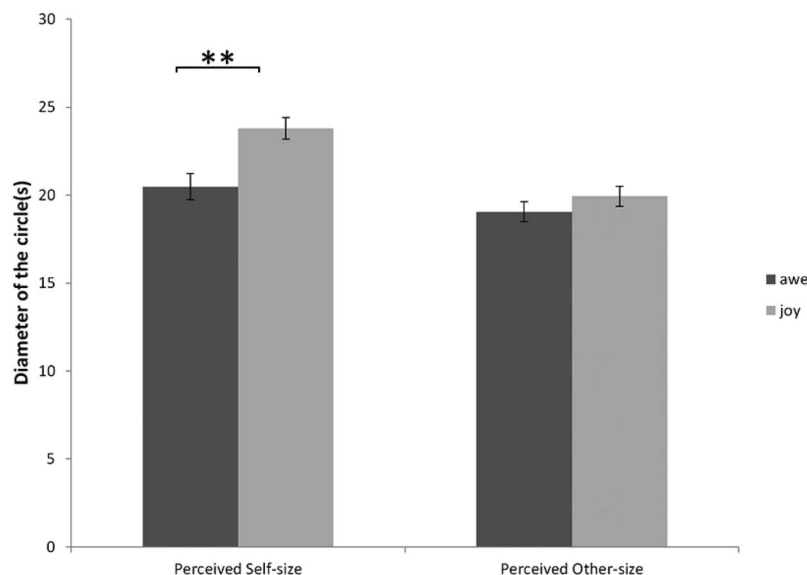


Figure 5. The influence of awe and joy upon perceived self-size and perceived other size in a drawn social network (Study 5). ** $p < .01$.

36.67, $SE = 1.87$). Further, in keeping with our content hypothesis, culture significantly interacted with emotion, $F(1, 176) = 6.38$, $p = .01$, $\eta_p^2 = .04$. Simple effect analyses suggested that among CHN participants, experiencing awe ($M = 33.41$, $SE = 2.64$) led to a social network with closer distances between the self-circle and other-circles compared with experiences of amusement ($M = 39.93$, $SE = 2.64$), $F(1, 176) = 3.35$, $p = .06$. Among U.S. participants, experiencing awe ($M = 60.79$, $SE = 3.02$) led to an expanded social network compared with experiences of amusement ($M = 53.96$, $SE = 2.79$), $F(1, 176) = 3.04$, $p = .08$.

In Study 5, only awe, but not amusement, led to reductions in perceived self-size in Chinese and U.S. participants, in line with Hypotheses 1 and 3. More important, awe did not lead to similar reductions in the perceived size of others. At the same time, in line with Hypotheses 4 and 5, culture influenced the content of the influence of awe upon collective engagement: in China, it involved greater closeness to others in the social network, and in the United States, it involved more social ties.

Study 6: Awe, the Small Self, and Shifted Self-Attention

Thus far, we have seen that awe produces a specific form of small self, one that is free of the reduced sense of rank or power. Might other emotions diminish perceived self-size but reduce the sense of rank and power? Evidence related to this question would further clarify the unique kind of small self that accompanies awe.

One obvious possibility is shame. Shame involves both a small self and reduced sense of status (Lindsay-Hartz et al., 1995; Miller, 1985; Ronningstam, 2005; Tangney, 1996). Further, while feeling shameful individuals tend to focus on themselves and negative self-evaluations (Lewis, 1993; Tangney & Dearing, 2003). Given these findings, in Study 6 we compared the effects of awe and shame upon perceived self-size, expecting shame to produce a greater focus upon the self (Lewis, 1971; Niedenthal, Tangney, & Gavanski, 1994; Tangney et al., 1996). We expected awe, by contrast, to shift individuals' attention away from the self to focus more toward the outside entity (Shiota et al., 2007).

A second aim in Study 6 was to further illuminate the mechanism by which awe leads to more collective engagement (Hypothesis 4). In Study 5 we relied on a social network analysis to measure individuals' collective engagement. In Study 6, we measured individuals' sense of inclusion of community in the self (Mashek, Cannaday, & Tangney, 2007). Guided by our analysis of awe and treatments of attention—self versus others—and collective orientation (Fiske & Yamamoto, 2005; Triandis, 1990; Triandis et al., 1988), we predicted that by rendering the self small, awe would shift attention away from the self and lead to greater collective engagement.

Method

Participants. There were 242 participants (90 men; $M = 36.10$ years, $SD = 13.46$ years) were recruited via Amazon's MTurk to complete an online survey. 79.3% were European American, 7.9% were African American, 3.7% were Latino, 4.5% were Asian American, and the remaining 4.5% were Native American or other ethnicity.

Measures and procedure. After giving consent, participants completed measures of baseline perceived self-size, and then re-

called and wrote about a personal experience of awe, shame, or a neutral control. Finally, they were asked to rate their perceived self-size, self-focus tendency, collective engagement and then completed other self-related measures including self-esteem, subjective social status, and sense of power.

Perceived self-size change. The full 5-item perceived self-size scale ($\alpha = .82$) was used, as in Study 1. To measure participants' perceived self-size change, we subtracted participants' reported baseline from their reported perceived self-size after the emotion induction.

Emotion inductions. Participants were randomly assigned to describe a particular experience that elicited awe, shame, or a neutral state. Participants were provided with the definition of each target emotion shown below and an emoticon showing the prototypical facial expression of the target emotion. Following Strack, Schwarz, and Gschneidinger (1985), the instructions emphasized focusing on concrete, vivid, experiential aspects.

Awe. When experiencing awe, people usually feel like they are in the presence of something or someone that is so great in terms of size or intensity that their current understanding of the world, their surroundings, or themselves is challenged in some way. Please take a few minutes to think about a particular time, fairly recently, during which you felt awe. This might have been when you saw a beautiful sunset, when you saw a breathtaking view from the top of a mountain, or any other time during which you encountered a natural setting that you felt was amazing.

Shame. When experiencing shame, people usually feel a painful feeling of humiliation or distress caused by the consciousness of wrong or foolish behavior. Please take a few minutes to think about a particular time, fairly recently, during which you felt shame. This might have been a time you knew you were doing something wrong, when you felt unworthy or unloved, or when you were being criticized.

Neutral. Please recall the last time that you did laundry. Please describe your memory using 5–10 sentences. Please include details with the following information: what happened, when it happened, and who and/or what was involved.

Self-focus. To measure individual's self-focused tendency, we used the self-focus subscale of the Focus of Attention Questionnaire (Woody, 1996), which consists of 5 items. Participants were instructed to focus on their current state and respond with their agreement from 1 (*strongly disagree*) to 5 (*strongly agree*) to the following items: "I focus on what I will say and do next," "I focus on the impression I am making on the other person," "I focus on my level of anxiety," "I focus on my internal bodily reaction (for example, heart rate)," "I focus on past social failure" ($\alpha = .77$).

Collective engagement. We assessed collective engagement using Inclusion of Community in Self (ICS) Scale (Mashek et al., 2007), a single-item pictorial measure consisting of six pairs of overlapping circles, with each pair of same-sized circles overlapping slightly more than the preceding pair. In each pair, the left circle is labeled as "self" and the other as "community." Participants were instructed to select the pair of circle best represents their relation with their community at large. The ICS is well-validated measure of the degree individual feels belonging to their community and correlates strongly with psychological sense of community (Mashek et al., 2007) measure of community connectedness.

Self-esteem. Self-esteem ($\alpha = .91$) was assessed as in Study 1.

Sense of power. Sense of power ($\alpha = .90$) was assessed as in Study 1.

Results and Discussion

Awe and shame and diminished perceived self-size. A one-way ANOVA showed significant differences in perceived self-size change across the three conditions, $F(2, 241) = 20.88, p < .001, \eta_p^2 = .15$. To test more specific hypotheses, we conducted an orthogonal contrast (“control contrast”), testing whether participants who experienced awe ($M = -2.30, SE = 0.81$) and shame ($M = -6.51, SE = 0.89$) reported a greater diminishing of perceived self-size than those in the neutral condition ($M = .70, SE = 0.64$; coded as awe = 1, shame = 1, neutral = -2). This control contrast was significant, $t(239) = -5.31, p < .001$, suggesting that awe and shame both decreased participants’ perceived self-size. This result is portrayed in Figure 6.

Awe, shame, self-esteem, and the sense of power. A one-way ANOVA showed a significant difference across conditions in reports of self-esteem, $F(2, 241) = 12.40, p < .001, \eta_p^2 = .09$. Further, we conducted two different orthogonal contrasts. In the first contrast (“shame contrast”), we tested whether the participants primed with shame ($M = 24.69, SE = 0.88$) reported lower self-esteem than those in the awe ($M = 29.33, SE = 0.64$) and neutral ($M = 29.27, SE = 0.73$) conditions (coded as awe = 1, shame = -2, neutral = 1). In the second contrast (“awe contrast”), we compared the awe condition to neutral condition (coded as awe = 1, shame = 0, neutral = -1). As expected, the shame contrast was significant, $t(239) = 4.98, p < .001$, whereas the awe contrast was not significant, $t(239) = .06, p = .95$.

A similar ANOVA revealed a significant difference in sense of power across the three conditions, $F(2, 241) = 10.40, p < .001, \eta_p^2 = .08$. The two planned comparisons revealed that the shame contrast was significant, $t(239) = 4.37, p < .001$, whereas the awe contrast was not significant, $t(249) = -1.33, p = .19$, again revealing that shame, but not awe, diminished the individual’s sense of power.

Awe, shame, and self-focused attention. A one-way ANOVA revealed a significant difference in the extent of self-focused attention across the different three conditions, $F(2, 241) = 19.13, p < .001, \eta_p^2 = .14$. A planned comparison (coded as awe = 2, shame = -1, neutral = -1) revealed that participants who

experienced awe ($M = 13.99, SE = 0.47$) were less self-focused compared with participants in the control ($M = 15.20, SE = 0.21$) and shame ($M = 17.90, SE = 0.48$) conditions, $t(239) = -4.62, p < .001$. Compared with control participants, those who experienced shame were more self-focused (coded as awe = 0, shame = 1, neutral = -1), $t(239) = 4.16, p < .001$.

Awe enhances collective engagement. A one-way ANOVA showed a significant difference in individual’s sense of inclusion into the collective across the three conditions, $F(2, 241) = 6.29, p = .002, \eta_p^2 = .05$. A planned comparison (coded as awe = 2, shame = -1, neutral = -1) revealed that participants who experienced awe ($M = 3.23, SE = 0.16$) felt more included in their community compared with participants who experienced shame ($M = 2.46, SE = 0.16$) and those in the control condition ($M = 2.72, SE = 0.14$), $t(239) = 3.37, p = .001$.

Awe, small self, self-focused attention, and collective engagement. In our final analyses, we carried out two mediation analyses to address *how* awe’s diminishing of perceived self-size might lead to a more collective engagement. Figure 7 illustrates the mediational model and provides path coefficients. In the first mediation analysis, we tested whether awe, through diminishing perceived self-size, shifted one’s attention away from the self. We followed a bootstrapping procedure using the SPSS PROCESS macro provided by Hayes (2013). Figure 7 portrays the significant indirect effect of awe (in contrast to control condition) on self-focus level as mediated by perceived self-size change (95% confidence interval, CI [-0.40, -0.01]). The direct effect of awe on self-focus level became no longer significant (95% CI [-0.09, 0.16]) when perceived self-size change was included as a mediator.

In a second mediation analysis, we investigated whether awe, through shifting focus away from the self, leads to more collective engagement. Following the same bootstrapping procedure, we discovered the significant indirect effect of awe (in contrast to control condition) on collective engagement as mediated by shifted self-focus (95% CI [0.00, 0.10]). The direct effect of awe on self-focus level became less significant (95% CI [0.00, 0.43]) when level of self-focus was included as a mediator.

The results from our final study provided evidence for the central hypotheses (Hypotheses 1 and 4) guiding this investigation, that experiences of awe diminish the sense of the self, enabling more collective engagement. First, we documented that the diminishing of the self brought about by awe does not involve reduced feelings of esteem, status, or power when compared with appropriate control conditions. Second, we have provided causal evidence showing that awe, through the diminishing of the self, increases the orientation to the collective.

General Discussion

Awe is the quintessential collective emotion, involved in processes that lead the individual to be part of something bigger than the self, most typically social collectives. Central to this theorizing is the small self hypothesis: awe diminishes the individual’s sense of self, which enables the individual to orient to others and fold into social collectives. In the present investigation, we tested five predictions that derived from this small self hypothesis. To do so, we first validated self-report and pictorial measures of perceived self-size. We then used these measures in tests of the small self-hypothesis, studying daily, naturalistic, and laboratory-based experiences of awe. We compared

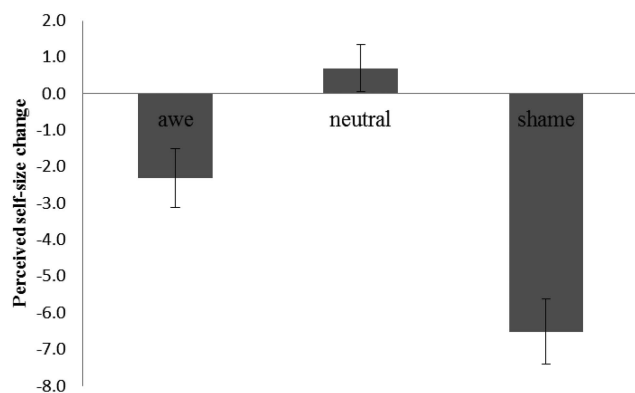


Figure 6. The influence of awe, a neutral state, and shame upon the perceived self-size change. The error bars reflect $\pm 1 SE$ (Study 6).

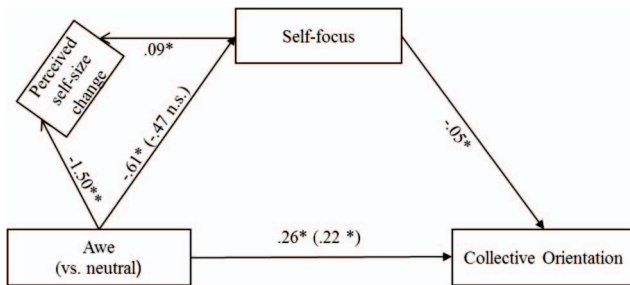


Figure 7. Mediation model for Study 6. The predictor variable compares the awe condition with control condition (coded as awe = 1, neutral = -1). Unstandardized coefficients are displayed. * $p < .05$. ** $p < .01$.

awe against other general positive emotions (joy and amusement), a negative emotion (shame), and relevant control conditions. We also tested our hypotheses with participants from both individualistic and collectivist cultures, and of varying ages and demographic backgrounds.

In keeping with our central hypothesis, awe predicted a smaller perceived self-size when experienced in response to multiple elicitors in the context of people's daily lives (Study 2), when in an august natural setting (Study 3), after viewing tightly controlled, nonsocial awe-eliciting video clips (Studies 4 and 5), and when immersed in a recollection of a past experience of awe (Study 6). The influence of awe upon the small self replicated across measures of perceived self-size—self-report, symbolic, and freely drawn representations of the self. More important, and consistent with studies on how emotions shape social cognition (Keltner & Horberg, 2015; Lerner et al., 2015; Schwarz & Clore, 1983), reports of awe but not other positive emotions predicted the magnitude of the small self effect (Studies 2–4), while the physical vastness of the elicitor also did not (Study 2).

Advancing beyond past studies of awe and the small self (e.g., Piff et al., 2015), still other results highlighted the specific nature of the small self effect. Awe did not diminish one's sense of status or rank (Studies 3–5), nor did it diminish individuals' self-esteem (Study 6). Moreover, it is not the case that experiences of awe, triggered by elicitors that transcend the human scale, diminish perceptions of humans in general—it did not diminish perceptions of the size of other people in one's social network (Study 5); instead, experiences of awe diminish the perceived size of the self in particular. In Study 6, we provided evidence showing how awe's effect upon perceived self-size orients the individual to the social collective. Taken together, the evidence from these six studies support our overarching small self hypothesis, and the idea that awe shifts patterns of self-representation that are conducive to the demands of being in social collectives—assuming collective identities, orienting to the interests of others, and collaboration.

Across several studies we also tested our functional universality hypothesis concerning cultural similarities and variations in the small self effect. On the one hand, awe's diminishing of the self was replicated in both collectivistic and individualistic cultures across multiple elicitors and various contexts. At the same time, we also identified theoretically relevant cultural variations in the elicitor, magnitude, and content of the small self effect. The elicitors of awe differed in China and the United States, with awe being more frequently caused by personal actions in the United States and socially engaging events in China. The magnitude of the small self effect

varied according to culture but inconsistently across studies. When participants experienced awe within daily situations, more collectivistic Chinese participants showed moderately greater small self effects (Study 2), but when in an iconic setting of an American natural wonder, the small self effect was greater for Americans (Study 3). However, when immersed in an awe eliciting video in a laboratory setting, participants reported similar small self effects with no magnitude differences between the two cultures. Study 5 documented cultural variations in the content of the small self effect: it involved an expansion of the number of people within the social networks of U.S. participants, and a strengthening of closeness of ties in those of Chinese participants. These findings are in keeping with the claim that the small self that awe produces might be thought of as a functional universal: that while varying in elicitor, magnitude, and content across cultures, it is cognitively available to individuals from different cultures and serve a similar end, in integrating the individual into the collective (Norenzayan & Heine, 2005).

Advancing the Science of Awe

The present investigation advances the science of awe in both conceptual and methodological ways. First, it is noteworthy that most of the published work on awe has centered on awe in response to nature. Awe has been elicited with videos of vast scenes of natural beauty (Piff et al., 2015; Rudd et al., 2012; Shiota et al., 2004; Valdesolo & Graham, 2014), by asking participants to recall experiences in nature (e.g., Piff et al., 2015), or by situating participants in a vast natural environment (Piff et al., 2015; Shiota et al., 2004). This methodological bias raises questions about whether the collective effects of awe—enhanced prosociality, for example—are limited to nature-based awe and beauty. Our research suggests not. For example, in Study 2, we observed similar small self effects across dramatically different elicitors of awe—including ones involving spirituality, interactions with other people, technology, cultural artifacts, and knowledge. These findings are some of the first in this emerging literature to suggest that the effects of awe may generalize across its many possible elicitors.

The results from our second study highlight a critical area of inquiry—the interpersonal elicitors of awe. In both China and the United States, people's more quotidian experiences of awe were most typically elicited in response to other people. This in itself diverges from classic analyses of awe as a religious, political, or aesthetic emotion (Keltner & Haidt, 2003). The different sources of interpersonal awe—moral beauty, virtuosity, extreme altruism, and perhaps charismatic dominance—merit systematic investigation. As this line of inquiry advances, the field may arrive at the notion that a primary source of awe, even in the evolutionarily old sense, is the actions and attributes of other people.

Study 2 also uncovered interesting cultural differences in awe. For example, self-relevant experiences were almost never a source of awe for Chinese participants, but a relatively common source of awe for participants in the United States. It is common for cultures to vary in the specific elicitors of an emotion (e.g., Mesquita & Frijda, 1992), and this finding is in keeping with this tradition. This finding also dovetails with studies documenting that self-esteem is more elevated in individualistic cultures (Heine & Lehman, 1997). It will be interesting for the new science of awe to explore other forms of culture—religion and class most notably—and their contributions to the experience of awe in individuals. We suspect that

culture-related differences in the elicitors of awe will say a great deal about how individuals assume different collective identities.

Finally, the present investigation uncovered what may prove to be a central mediator of awe's effects on patterns of social cognition and behavior—the small self. A diminished self-awareness is believed to be a gateway to all manner of other-oriented, social behaviors, from collaboration and cooperation to religious practice (Keltner et al., 2014). As the science of awe progresses and empirical work continues to document its rich and varied effects, research in this field will be well served by measuring the small self as a potential mediator. It will be interesting, for example, to see whether the small self effect accounts for how awe might motivate religious or political commitment, prosocial action, and expanded intellectual curiosity.

Understanding Cultural Variations in Emotion

The present research also sheds light on classic debates regarding the extent to which the experience and expression of emotion is universal (e.g., Ekman, 1972; Mesquita & Frijda 1992; Izard, 1971). Whereas many emotion researchers have argued for the universality of emotion (e.g., Chan, 1985; Ekman, 1972; Keltner & Haidt, 1999; Mandal, Saha, & Palchoudhury, 1986; see reviews by Matsumoto, 2001), other researchers argue that culture largely shapes individuals' emotions—including perception, expression, regulation, and related psychological outcomes (e.g., Jack, Garrod, Yu, Caldara, & Schyns, 2012; Matsumoto, 1990; Matsumoto & Ekman, 1989; Matsumoto, Yoo, & Nakagawa, 2008; Tsai, 2007). The present research documents a nuanced relation between emotion and culture indicating that the experience of emotion cannot simply be defined either as universal or culture-specific. We documented that awe, as a complex emotion, exhibits universal features but also differs in some respects from culture to culture.

Specifically, on the macro level, people from both individualistic and collectivistic cultures experience awe in their daily lives and in certain situations. Further, regardless of their initial self-construal, people from cultures that differ in terms of collectivism and individualism both report a smaller self-size in response to experiencing awe. However, on the micro level, we also find that responses to awe experiences differ from culture to culture in specific ways. For example, although various elicitors can evoke awe in individuals from all cultures, the frequency with which each elicitor triggers daily awe experiences is largely shaped by culture. Moreover, the effect-size of awe on the small self might also be affected by the interaction between culture and specific elicitors. Consistent with functional universality hypothesis, we demonstrate that the core component of an emotional experience is universal, but some of its meanings may be shaped by culture (Elfenbein & Ambady, 2002). We propose that examining different levels of cultural universality and variability will allow for a better understanding of emotions and their relation between cultures.

Limitations and Future Directions

There are several limitations and future directions worth noting as they apply to the present investigation. With respect to the constitution of our samples, many of our findings were restricted to college students (Studies 1, 2, 4, and 5). We note that our U.S. college samples were quite diverse with respect to ethnic identity

and social class. Nevertheless, it will be important to further study the effects of awe in nonstudent samples (Henrich et al., 2010).

While the research presented in this paper focuses on awe as a positive emotion, further work must be done to extend these findings to negatively valenced awe, such as fear-based awe experienced during, for example, thunderstorms, floods, and famines (McDougall, 1936; Gordon et al., 2016). These more fear-based awe experiences may well produce different self-representations than those captured in the present investigation, which largely focused on more positively valenced awe experiences. It would be intuitive to predict that more fear-based forms of awe will diminish the individual's perceived self-size and status. As one extension of this possibility, one might expect more hierarchical, fear-based religions to not only render the self small, as we observed here, but also to reduce the individual's sense of status and esteem (Norenzayan & Shariff, 2008). This warrants careful examination in future studies.

It will also be important to explore the "dark side" of awe; the possibility that awe, through the small self, might produce problematic social behaviors. For example, to the extent that awe experiences render the self small, one might expect the individual to engage in socially destructive behaviors, such as property damage, for the sake of the collective. Perhaps most plausible is the possibility that awe, again through its effects on the small self, might predict harmful behaviors directed at outgroups—outgroup bias, aggression, and even genocidal tendencies. For example, in the context of deindividualized groups, specific religious awe might diminish the individual's self and incite individuals to carry out suicide terrorist attacks.

Another area for future research is to better understand how culture influences the magnitude of awe and the small self effect. As noted, our studies have yielded inconsistent evidence toward the magnitude prediction, suggesting that different elicitors and situations might determine the effect of awe on perceived self-size change. It is unclear why different from Studies 2 and 4, we observed in Study 3 that culture significantly interacts with the small self effect: in the presence of an august natural setting in the U.S., the small self effect was stronger for Americans. One possibility is that the location of test—Yosemite National Park—primes American participants with more intense awe experience that leads to greater magnitude of the effect. It is also possible that the fame of Yosemite National Park and its cultural meaning enhance the association between the emotional experience with the self. Finally, it is possible that culture-specific prototypes of awe exist, and exert moderating influences on the small self. Future research should examine how different types of awe interact with the effect of awe on the small self under different cultures.

Finally, in the current research, we compared cultures based on the geographic location our participants came from—a classic way of defining culture (Shweder & Le Vine, 1984). It is important to note that within the same geographic location, there can exist cultural differences. For example, some studies have found that within the United States, ethnicity largely shapes individuals' emotion (e.g., Tsai, Knutson, & Fung, 2006). Future research should move beyond geographic location comparison, and extend to wider range of culture comparisons.

Conclusion

We have demonstrated the robust effect of awe on the small self. This universal influence of awe, we believe, holds keys to under-

standing why the human species, with unprecedented complexity of self-representation, has at the same time evolved to experience an emotion that so quickly diminishes the self, be it in nature, art, religion, or around inspiring people.

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(Appendices follow)

Appendix A
Perceived Self-Size Scale

Small self-1
Small self-2
Symbolic self circle

In general, I feel relatively small
In general, I feel insignificant
Think about one of the circles below as representing yourself.
Please choose the circle that best describes how big or small you feel about yourself.

A

B

C

D

E

F

G

A

B

C

D

E

F

G

Full body image

Please indicate which one of following drawings best describes yourself.

1

2

3

4

5

6

7

“Me” signature

Looking at the drawing you selected in the question above, which of the following signatures below would most closely resemble your own?

1

2

3

4

5

6

(Appendices continue)

Appendix B

The Coding Scheme Used to Code Elicitor of Awe Experiences in Study 2

Coded for	Example
(1) Something in nature	I experienced awe today when I hiked up to the Big C to meditate. There was a beautiful sunset, and I felt so connect to the world and so inspired by the beauty. I felt very small, yet at the same time part of something bigger.
(2) Another person	I had a lab exam today. It was really hard because of the math portion. I was in awe with a friend of mine who would only miss one question because of the wording of the problem. Sometimes I wish I was that smart.
(3) A piece of art or music	My most awe-inducing moment today was looking at various works of art. I was trying to get ideas and be inspired to be artistic today and paint, and while I looked at many pieces of art I was increasingly amazed at the effort and the outcome. This experience really inspired me to take the time and paint.
(4) A building or some aspect of architecture	I had a meeting with my mentor today and planned to meet at her office. Her office was in a building that I'd always notice, but never knew what went on inside. I was pretty amazed at how it looked inside and the cool, comfy offices that they had.
(5) Some kind of spiritual experience (religious or spiritual more broadly)	I went to church tonight. There was some really beautiful worship in the beginning of service. I was in awe of God and who He is.
(6) Some kind of knowledge	I was at work in the lab and was taught a new process that I had no experience with until today. The effects of very subtle changes in temperature on the outcome of the process was awesome in the literal sense. The actual tool that was used for the process was also awesome.
(7) Some kind of technology	It was in my sociology class about social media. I was awestruck and humbled by the vastness of data and the power it exerts over each and every one of our lives, whether we choose to ignore it or not. Social media and technology amasses so much data about our lives that is hard to comprehend—to the point where our every heartbeat can be timestamped.
(8) Oneself	I received my biochem midterm back and was in awe that I performed averagely. I thought I performed terribly badly and was expecting a very low score. That being said, I wasn't proud of the fact I did average, I was simple in awe that I did better than I thought I did.
(9) Other	I had a spooky Halloween at a scary haunted house. It was pretty incredible!

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