# Cultural Variations in the Appraisals of Awe

by

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**Abstract**

The emotion of awe arises in response to perceptually vast stimuli that require an adjustment of current mental schemas. Guided by a social functional approach, we examined the appraisals of awe among individualistic and collectivistic cultures. To study this, we established a comprehensive set of appraisal dimensions proposed in past appraisal theories. Through analyzing narratives of awe experiences composed by participants ($N$ = 2,764) from 26 countries, we demonstrated how the appraisal dimensions of awe differ between people from individualistic and collectivistic cultures. Specifically, our findings suggested that people with more individualistic cultural orientations were more likely to attribute their awe experiences to themselves and less likely to attribute them to other people or to the situation. In addition, we discovered cultural variations in other appraisal dimensions of awe, such as commitment, identity, influence on someone else's well-being, powerfulness, dominance, and arousal. Together, these findings revealed the potent influence of culture on the appraisal of awe, supporting the claim that components of emotions vary across cultures. Our discussion focuses on the implications of these results for current studies concerning the cultural variations in emotional experiences.

*Keywords:* awe, appraisals, culture, emotion

Imagine yourself standing on the top of a mountain, overlooking the sunken valley, the boundless forest, and the effervescent creeks. The cold wind pierces through the spirited air, bathing your senses in the smell of fresh, moist earth, carrying the shrill cries of eagles soaring in distance. All else seems insignificant when this uncontained and immortal beauty overtakes your senses in the perceptual vastness of nature. This experience is *awe*—a transformative emotional state that is central to many experiences of religion, politics, nature, and art (Keltner & Haidt, 2003).

In their prototype-based approach to awe, Keltner and Haidt (2003) defined this emotion as a response to perceptually vast stimuli that defy and transcend current frames of reference. The perception of vastness can refer to an entity's physical size, ability, prestige, power, or complexity. This perceived greatness challenges one's usual frame of reference in some dimension, thereby inducing cognitive restructuring of current mental schemas in a way that incorporates the novel experience. Consistent with this conceptualization of awe, Shiota and colleagues (2007) illustrated that awe, but not joy or pride, elicits both a perception of greatness outside the self and a need for revising cognitive structures to accommodate novel stimuli. Additionally, Keltner and Haidt (2003) introduced five themes—threat, beauty, exceptional ability, virtue, and the supernatural—that alter or "flavor" an emotional experience, giving rise to the diversity of awe-related states. Later scholarly work confirmed the frequent presence of these five flavors in awe-related situations (Cohen et al., 2010; Gordon et al., 2016; Guo et al., 2018; Haidt, 2000; Konecni, 2005; Preston & Shin, 2017; Yaden et al., 2019).

Awe is a multifaceted emotion that can be imbued with joy, pride, or fear depending on the context and how the individual appraises or interprets the experience (Keltner & Haidt, 2003; Lazarus, 1991a; Smith et al., 2014). For example, standing on the mountaintop, one may feel

strength and pride for conquering this physical challenge, faith and gratitude for the panoramic view, or fear and reverence for the overwhelming power of nature. The subjective interpretations accompanying emotional experiences vary across individuals and cultures (e.g., Mesquita et al., 2016). However, to the best of our knowledge, past studies on the appraisal of awe have only involved Western participants, calling into question the extent of generalisability across cultures. The present investigation aims to bridge this gap by examining how culture may shape the appraisal of awe experiences.

## An Appraisal-Based Approach to Awe

Our study was grounded in an appraisal-based framework, pioneered by Arnold (1960) and Lazarus (1968). This approach posits that emotional experience is a function of the distinct patterns of appraisals relevant to the organism's present context (e.g., Lazarus, 1991c; Lerner & Keltner, 2001; Lerner et al., 2015; Oveis et al., 2010; Smith & Ellsworth, 1985). In other words, the emotions that one experiences are predictable from one's subjective interpretations of the situation (de Rivera, 1977; Ellsworth & Scherer, 2003; Frijda, 1986; Lazarus, 1991b; Roseman, 1984, 1991; Scherer, 1982b, 1984a, 1984b; Smith & Ellsworth, 1985, 1987; Solomon, 1978; Weiner, 1982). At the most general level, appraisals involve positive or negative evaluative judgments of the actual situation in relation to the ideal situation (Carver & White, 1994; Higgins, 1997; Roseman, 1996; Russell, 2003). In practical application, psychologists commonly define human emotions and distinguish them from similar emotions by analyzing their appraisal profiles beyond positive or negative valence (Lerner & Keltner, 2000). For example, fear is elicited by appraisals of threat accompanied by novelty or uncertainty (Steimer, 2002), and anger is associated with appraisals of injustice (Lazarus, 1991b). These appraisal patterns constitute the

central relational themes that conceptualize the identified emotion (Campos et al., 1989; Lazarus, 1991c).

Many appraisal theorists believe that the combination of a limited number of appraisal categories—the *core* appraisal dimensions—explain variance in the experience of specific emotions (e.g., Ellsworth, 1994; Folkman & Lazarus, 1985, 1988; Scherer, 1984a; Smith, 1989). Previous multidisciplinary studies discovered significant convergence among the core appraisal dimensions presupposed by different appraisal theories (see Ellsworth & Smith, 1985; Frijda et al., 1989; Roseman, 1979; Roseman et al., 1990; Scherer, 1982a), confirming high face validity of these overlapping categories. Extensive research has examined how particular configurations of the core appraisal dimensions elicit differential emotional reactions (Frijda, 1987; Keltner & Lerner, 2010; Lazarus & Smith, 1988; Scherer, 2009; Smith & Lazarus, 1990, 1993; Tesser, 1990). Moreover, empirical studies suggest that there are variations within an emotion category such as awe (e.g., Ekman, 1972, 1992; Fehr et al., 2009; Rozin et al., 2009; Scherer & Ekman, 2014; Shaver et al., 1987; Tangney et al., 1995). These findings underpin our investigation of the appraisal dimensions that may account for the more complex and subtle nature of awe-related states. Specifically, we expected that the different patterns of appraisal dimensions across individuals reflect the variety of awe experiences.

We designed the present study on the basis of Smith and Ellsworth's (1985) appraisal dimension model (e.g., Ellsworth & Smith, 1988a, 1988b; Smith & Ellsworth, 1987). Drawing on theoretical schemes developed by previous appraisal researchers, Smith and Ellsworth (1985) identified eight core dimensions and suggested that characteristic patterns of appraisal distinguish different emotions. To test this hypothesis, they asked participants to recall fifteen distinctly themed emotional experiences and analyzed their ratings of these situations on the

eight proposed theoretical dimensions. Six orthogonal dimensions emerged from their analyses: perceived *pleasantness*, *anticipated effort*, the extent to which one desires to pay *attention* to the situation, *certainty* about the situation, whether self or other people bear *responsibility/control* (or *human agency*; Smith & Ellsworth, 1987), and *situational control*, or the extent to which an impersonal agent or circumstance controls the event. For purposes of clarity, we divided the human agency dimension into *self-agency* and *other-agency*, as these two subcategories are not mutually exclusive (Ellsworth & Smith, 1988a, 1988b; Smith & Ellsworth, 1985, 1987). For instance, when an individual experiences awe from successful teamwork, they might attribute this emotion to both themselves and other team members. Taken directly from Smith and Ellsworth's (1985) interpretation, self-agency indicates the extent to which one feels responsible for and in control of the events, and other-agency represents the degree of responsibility and control one thinks someone else has in the situation.

Beyond the classic model introduced by Smith and Ellsworth (1985), more recent frameworks have supplied additional categories (e.g., Cowen & Keltner, 2017; Manstead et al., 1989; Mauro et al., 1992; Reisenzein & Hofmann, 1990). To build a comprehensive set of appraisal dimensions for awe, we integrated other theoretically relevant dimensions into the present investigation, including *arousal* (Cowen & Keltner, 2017; Mehrabian & Russell, 1974; Osgood, 1966; Posner et al., 2005), *commitmen*t (e.g., Cowen & Keltner, 2017; Frijda et al., 1989; Reisenzein & Hofmann, 1990), *dominance* (Cowen & Keltner, 2017; Mehrabian & Russell, 1974; Osgood, 1966; Scherer, 2009), *helplessness* (Frijda, 1987; Frijda et al., 1989), *identity* (Cowen & Keltner, 2017; Reisenzein & Hofmann, 1990; Smith & Mackie, 2008), *powerfulness* (Roseman et al., 1990; Scherer, 2009), and influence on *someone else*'s well-being (Frijda et al., 1989; Manstead et al., 1989; Reisenzein & Hofmann, 1990). We examined the

patterns in which the aforementioned appraisal dimensions fluctuated among experiences of awe across individuals.

## A Social Functional Approach Concerning Cultural Variations in Awe

Our investigation was also guided by a social functional approach to emotions that suggests the need for cross-cultural studies of awe. This approach presupposes that emotions have evolved to serve socially adaptive purposes, conveying information about the expresser's mental states and evoking emotional responses in others, thereby coordinating social interactions (Keltner & Haidt, 2001; Mesquita & Fridja, 1992; Mesquita & Leu, 2007; Van Kleef, 2009). Keltner and Haidt (2003) proposed that the emotion of awe reinforces and justifies social hierarchies by motivating individuals to commit to a powerful leader. Within this framework, awe is also thought to countervail self-interested attempts to overturn the social ranking. Prior research has discovered that outcomes of awe include self-diminishment (otherwise known as the "small self" effect), prosociality, humility, and collective engagement (Bai et al., 2017; Campos et al., 2013; Gordon et al., 2016; Piff et al., 2015; Shiota et al., 2007; Stellar et al., 2018), providing further evidence for the social functions of awe.

On one hand, the social functional approach has provided a framework for understanding that many prototypical features of an emotional response are likely to be universal (e.g., Boucher & Brandt, 1981; Keltner & Lerner, 2010; Mauro et al., 1992; Mesquita & Ellsworth, 2001; Scherer, 1997). For example, past investigations have concluded that displays of embarrassment, expressions of love, and several varieties of smiles and laughs elicit specific inferences and reactions from observers (Eibl-Eibesfeldt, 1989; Feinberg et al., 2012; Gonzaga et al., 2001; Keltner, 1995; Niedenthal et al., 2010; Van Kleef, 2016). More recent research has demonstrated universality in awe-related expressive behavior (Cordaro et al., 2016; Simon-Thomas et al.,

2009) and the accompanying peripheral physiological response—goosetingles (Konecni, 2005; Maruskin, Thrash, & Elliot, 2012; Maruskin, Bai, et al., in press; Shurtz et al., 2012). Additionally, Shiota and colleagues (2003) identified a distinctive facial expression that is frequently associated with awe, which consists of raised inner eyebrows, widened eyes, and an open, slightly drop-jawed mouth.

On the other hand, the social-functionality framework has yielded advances in understanding cultural variations in emotions (e.g., Keltner & Haidt, 1999; Keltner & Kring, 1998; Mesquita et al., 2016; Niedenthal & Brauer, 2012). Within this framework, emotions are regarded as multicomponent cognitive processes comprising antecedent events (or elicitors), event coding, appraisal, physiological reaction patterns, action readiness, emotional behavior, and regulation (Mesquita & Frijda, 1992; Mesquita & Markus, 2004). Extensive research has illustrated that culture shapes emotions at multiple cognitive levels, (e.g., Jack et al., 2012; Matsumoto, 1990, 2001; Matsumoto & Ekman, 1989; Matsumoto et al., 2008; Tsai, 2007), because variations in the components of emotion facilitate one's adaptation to the shifting demands of the broader cultural context (Mesquita & Leu, 2007; Mesquita et al., 2016). Specifically, abundant empirical evidence has shown that cultural differences exist in the appraisals of particular emotion terms or situations (Elfenbein & Ambady, 2002; Haidt et al., 1993; Mesquita & Ellsworth, 2001; Roseman et al., 1995), especially given the highly subjective nature of situation evaluation (Scherer, 1997). For example, Uchida and colleagues (2004) found that North Americans typically interpret an experience of happiness as a personal achievement or an affirmation of positive attributes of the self, whereas East Asians often perceive a realization of social harmony within their experiences of happiness. Given that components of emotion are culturally constructed to enable individuals to achieve the central goals in a given sociocultural

context (Mesquita et al., 2016), we postulated that there will be culture-specific variations in the appraisal of awe.

### Situating Awe Within the Cultural Dimension of Individualism/Collectivism

In the present research, we examined awe-related variations in appraisal dimensions along the continuum of individualistic and collectivistic cultures wherein people hold, respectively, independent and interdependent self-construals (Hofstede et al., 2010; Markus & Kitayama, 1991a, 1991b; Shweder & Bourne, 1984; Shweder & Le Vine, 1984; Triandis, 1989). Markus and Kitayama (1991a, 1991b) first proposed that people from different cultures have different construals of the self that influence the nature of their cognitive and emotional experiences. Specifically, the independent self-construal derives from a belief in the autonomy and uniqueness of each individual—the normative imperative of many Western cultures. People with independent self-construals are hypothesized to promote their own goals, and thus they experience and express more ego-focused emotions (e.g., pride, anger) that highlight their internal attributes. In contrast, those with interdependent self-construals perceive themselves as most meaningful and complete when embedded in the appropriate social relationship, which ultimately motivates them to connect with and assimilate into the context. This belief corresponds to the fundamental unity within communities that is central to many non-Western cultures (Kondo, 1982). Those who perceive themselves as interdependent often experience other-focused emotions (e.g., sympathy, shame) and allow other people to be the referents for organizing their own experiences. Markus and Kitayama (1991a, 1991b) claimed that, on average, more individuals in Western cultures hold the independent self-construal relative to non-Western cultures, and vice versa for the interdependent self-construal. However, individuals vary in the extent to which they construe themselves in the culturally mandated way.

The corresponding country-level extensions of independent and interdependent self-construals are conceptual dimensions of individualism and collectivism, as these constructs are also related to the degree to which individuals integrate into primary groups (Bochner, 1994; Hofstede et al., 2010; Lonner et al., 1980; Minkov, 2007; Oyserman et al., 2002; Triandis, 1996). Although people in all cultures are hypersocial and tribalistic (Baumeister & Leary, 1995; Fiske & Yamamoto, 2005), people from individualistic cultures favor a wide and loosely connected social network, whereas people from collectivistic cultures seek secure and strong connections with others (Fiske & Yamamoto, 2005; Klarin et al., 2012; Triandis et al. 1988; Wheeler et al., 1989). Guided by these arguments, we propose that individualists and collectivists will differ in their appraisal of human agency when they experience awe, such that individualists will feel more responsible for and in control of the events, while collectivists will attribute responsibility and control to other people. In the same vein, we postulate that within awe experiences, collectivists will experience a stronger sense of commitment to an individual or creature, identify more strongly with a group of people, and think that the situation affects someone else's well-being more significantly as compared to individualists.

Extensive emotion research provides further support for the aforementioned cultural models of the self. Past scholarly work has demonstrated that people from the United States typically experience interpersonally disengaging emotions (e.g., pride, anger) more intensely than socially engaging emotions (e.g., friendly feelings, guilt), and that their subjective well-being is more closely associated with their experiences of positive disengaging emotions than those of positive engaging emotions; however, Japanese individuals tend to display the reversed pattern in both of these cases (Kitayama, Markus, & Kurukawa, 2000; Kitayama, Mesquita, & Karasawa, 2006). Moreover, prior studies found that East Asians, more so than Americans,

interpret events and emotions with reference to the context and prefer context-rich information to context-impoverished knowledge (Chan, 1985; Ji et al., 2000; Masuda & Nisbett, 2001; Masuda et al., 2008; Miyamoto et al., 2006; Wang, 2010). Because collectivists pay more attention to the context, they are more mindful of circumstantial factors that influence their emotional experiences. Along this line of thinking, we posit that people from more individualistic cultures are less likely to believe that an impersonal agent or context controls their awe experiences.

Past studies also suggest that individuals with independent versus interdependent self-construals have different relationships with their physical and social environments. Whereas individualists value influence goals (e.g., power, self-direction) and aim to change their surroundings to fulfill their own demands, collectivists prioritize adjustment goals (e.g., conformity, tradition) that facilitate their integration into the environment (Morling et al., 2002; Oishi et al., 1998; Schwartz, 1992; Schwartz & Sagiv, 1995; Weisz et al., 1984). Building upon these findings, Tsai and colleagues (2006) illustrated that Americans value high-arousal positive states (e.g., enthusiastic, energetic) because they aspire to act on and thereby influence their physical or social environment to achieve personal goals. In comparison, Chinese individuals prefer low-arousal positive states (e.g. calm, serene) because those affective states promote attention to surrounding stimuli, thus enabling them to adjust their own demands to those of the environment (Tsai et al., 2006). Following this line of thought, we postulate that individualists will feel more powerful, dominant, and stimulated in their awe experiences compared to collectivists. Additionally, people from more individualistic countries are less likely to feel helplessness in their awe experiences.

Guided by the aforementioned analyses of the cultural variations in emotions, we expect significant differences in the components of awe across cultures. However, the emergent

scientific study of awe is mostly limited to participants from the United States, thus providing an incomplete view of the global spectrum of awe experiences. To the best of our knowledge, Bai and colleagues (2017) are among a very small number of researchers who have studied the emotion of awe in a cross-cultural context. They found that individualistic participants more frequently reported awe experiences elicited in response to themselves whereas interpersonal elicitors were more prominent in collectivistic cultures. This discovery is consistent with Markus and Kitayama's (1991a, 1991b) theoretical claims regarding cultural construals of the self, further motivating our exploration of awe appraisals in a cross-cultural context. Specifically, we examined how appraisal dimensions such as self-, other-, and situational-agency vary among people from individualistic and collectivistic countries.

## The Present Investigation

In the present investigation, we examined how people from individualistic versus collectivistic cultures diverge in their appraisal dimensions of awe experiences. We built a comprehensive coding scheme that comprised 28 appraisal dimensions proposed in past appraisal theories (e.g., Ellsworth & Smith, 1988b; Frijda et al., 1989; Roseman et al., 1990; Scherer, 1982a; Smith & Ellsworth, 1985), and analyzed recollections of awe experiences provided by over 2,700 international participants from 26 countries. Given the above-mentioned analyses of culture and emotion, we tested the following specific hypotheses:

*Hypothesis 1a:* People from more individualistic countries will more frequently attribute self-agency as the primary agency in their awe experiences, and less frequently other- or situational-agency as the primary agency in their awe experiences.

*Hypothesis 1b:* People from more individualistic countries will appraise a higher level of self-agency and lower levels of other- and situational-agency in their awe experiences.

*Hypothesis 2a:* People from more individualistic countries will appraise a lower level of commitment in their awe experiences.

*Hypothesis 2b:* People from more individualistic countries will appraise a lower level of identity in their awe experiences.

*Hypothesis 2c:* People from more individualistic countries will appraise a lower level of someone else (influence on someone else's well-being, see Frijda et al., 1989) in their awe experiences.

*Hypothesis 2d:* People from more individualistic countries will appraise a higher level of powerfulness in their awe experiences.

*Hypothesis 2e:* People from more individualistic countries will appraise a higher level of dominance in their awe experiences.

*Hypothesis 2f:* People from more individualistic countries will appraise a lower level of helplessness in their awe experiences.

*Hypothesis 2g:* People from more individualistic countries will appraise a higher level of arousal in their awe experiences.

An exploratory goal of the present study was to discover how the remaining appraisal dimensions from our coding scheme map onto the 26 cultures, although we did not have empirically supported hypotheses for these items. Appendices A and B include the complete coding scheme with more in-depth definitions of each category and examples of narratives.

Additionally, our bibliographic review suggested that the majority of cross-cultural research on emotion has focused on Japan and China as prototypes of collectivistic countries, largely neglecting other regions where people hold collectivistic values. In light of this lacuna in the literature, we took pains to incorporate a more culturally diverse sample of participants from

26 countries across 6 continents, ranging from exceptionally individualistic countries such as the United States to extremely collectivistic countries such as Indonesia. Our second exploratory goal was to examine whether countries within the East Asian cultural sphere were representative of the entire sample of collectivistic cultures. The East Asian cultural sphere, or Sinosphere, consists of nations in East and Southeast Asia that were historically influenced by the Chinese culture (Choi, 2010; Wang, 2002). Because many collectivistic countries emerged from different cultural roots, we anticipated that socio-historical impacts may manifest in distinct appraisal dimension profiles of awe.

## Method

### Participants

The full sample consisted of 2,764 participants from 26 countries, including Argentina, Australia, Austria, Brazil, Canada, Chile, China, France, Germany, India, Indonesia, Ireland, Japan, Mexico, the Netherlands, Norway, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. We recruited our participants through an online Qualtrics panel. 160 participants who did not provide a narrative about their awe experience (e.g. no response, gibberish, self-reported no awe experience) were excluded from analyses, leaving a total *N* of 2,604. Of the participants, 50.77% (*n* = 1322) were female, 3.73% (*n* = 97) African, 23.50% (*n* = 612) Asian, 4.03% (*n* = 105) Central American, 45.16% (*n* = 1176) European, 7.72% (*n* = 201) North American, 3.65% (*n* = 95) Oceanian, and 12.21% (*n* = 318) South American. Participants ranged in age from 18 to 88 years old, with an average age of 44.16 years old (*SD* = 14.67).

### Materials and Procedure

Participants provided consent before completing a brief online survey that asked them to describe their most memorable awe experience (see Appendix B for examples of narratives). After composing a narrative of their recollection, they completed a series of questionnaires (e.g. perceived hierarchy, sense of community) and demographic items (e.g. age, gender). For the purposes of the present study, we only used participants' responses to the awe narrative prompt.

We designed the survey in English and administered it in the respective official language of each country. In order to ensure functional equivalence between the source and target versions of the survey, we adapted the back-translation techniques that are commonly used in cross-cultural research (Campbell et al., 1970). All materials were translated into the native language of each non-English speaking country by a research assistant fluent in both English and the country's respective language. A different research assistant subsequently translated the foreign language translation back into English. Additionally, a third-party translator compared the original English instruction with the back-translation and made final edits to the translated materials.

***Awe Narratives***

We asked the participants to recall a time when they felt the most intense awe in their lives. Considering the multiplicity of connotations of single words across cultures, we anticipated the difficulty of establishing cross-culturally equivalent interpretations of "awe" (e.g. Goddard, 2015; Russell, 1989, 1994). Thus, we oriented participants to a universal conception of awe through a theoretical definition and a sketched facial expression of awe prior to their recollection. We provided a definition of awe derived from Keltner and Haidt (2003), followed by an emoticon of awe, characterized by raised inner eyebrows, widened eyes, and an open, slightly drop-jawed mouth (Shiota et al., 2003). Figure 1 illustrates the pictorial depiction of awe.

*Please take a moment to recall the time you felt the most intense **awe** in your life. This moment was likely in response to something or someone that is so great in terms of size or intensity that your understanding of the world, your surroundings, or yourself was challenged in some way. You may have made a facial expression like this:*

Finally, participants responded to the prompt below which asked them to describe the awe experience they had just recalled. We encouraged all participants to compose the narratives in their native languages to ensure accuracy in content and expression of their responses.

*Now, we'd like you to take a moment to relive the experience of **awe** you just recalled and describe it to us. In the space below, in 5-7 sentences, please describe the situation you were in when you had this experience. That is, what exactly was it that made you feel this way? When was it? Where were you? Who were you with? What had you done immediately before the experience and what did you do or want to do immediately after?*

***Individualism/Collectivism***

We operationalized the cultural orientation of each country according to its respective Individualism Index (IDV) score, which measures the degree of individualism in the country's culture (Hofstede et al., 2010). The scores represent relative positions of countries on a unidimensional bipolar scale, with higher scores indicating more individualistic societies and lower scores indicating more collectivistic societies. Hofstede and colleagues (2010) confirmed a strong positive correlation between a country's national wealth and the degree of individualism in its culture with some exceptions, especially in East Asia.

In this study, we assigned an IDV score to each participant according to their self-reported country of residence. For example, we labeled all participants who considered themselves residents of the United States with an IDV score of 91. Table 1 presents the IDV

scores of the 26 countries of interest. According to Merritt (2000), a multitude of studies have successfully replicated and validated Hofstede's indexes of national culture as an operationalization of cultural orientations. However, it is important to acknowledge that this analytic approach ignored considerable information about within-country variance and thus required complementary individual-level analyses (Merritt, 1996).

### *Confounding Variables*

Other variables might confound the relationships between IDV and the appraisal dimensions of interest. For instance, individuals' levels of religiosity might covary with both their IDV scores and their ratings of appraisal dimensions. Furthermore, country-level variables such as life expectancy, birth rate, and GDP per capita might also account for the correlations between IDV scores and levels of appraisal dimensions. In the present investigation, we included these individual- and country-level variables in our models and explored whether the predicted relationships between IDV and the appraisal dimensions would remain significant after controlling for these variables.

**Religiosity.** Each participant responded to the question "How religious or spiritual are you?" on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Extremely*) ($M = 2.85$, $SD = 1.31$).

**Life Expectancy.** We obtained a measure of life expectancy at birth for the 26 countries of interest from the Global Health Observatory (GHO) data repository provided by the World Health Organization (WHO). The GHO data repository contains health-related statistics for its 194 member states. It provides access to datasets on life expectancy at birth and at age 60 in years by country for males, females, and both sexes from 2000 to 2016. For the purposes of analysis, we included the statistics of life expectancy at birth by country for both sexes in 2016,

the year when we collected the awe narratives. We assigned a country-level life expectancy value to each participant depending on their self-reported country of residence. For example, all participants who were US residents at the time of study participation have a life expectancy score of 78.5, as shown in Table 1.

**Birth Rate.** We collected global birth rate data from the World Factbook published by the Central Intelligence Agency (CIA), which provides information on the people and society for 267 world entities. The birth rate entry gives the average annual number of births during a year per 1,000 persons in the population at midyear. For purposes of analysis, we obtained birth rate data of the 26 countries of interest from 2016. Similarly, we assigned a country-level birth rate value to each participant according to their country of residence, such that a US participant would have a birth rate score of 12.5 (see Table 1).

**Gross Domestic Product (GDP) Per Capita.** We also collected global GDP per capita data from the CIA's World Factbook, which shows GDP on a purchasing power parity basis divided by population as of July 1 for the same year. In the same vein, we took each country's GDP per capita estimation from 2016 and applied to each participant residing in that country. All analyses employed the logarithmic transformation of GDP per capita to yield linear relations with the outcome variables, because statistical models such as regression analyses assume linearity (Cohen et al., 2013). Table 1 includes GDP per capita data of each country of interest.

## Narrative Coding and Analyses

Prior to coding the awe narratives, we first instructed bilingual research assistants to translate the narratives written in other languages into English. A different research assistant blind to the original narratives subsequently translated the English translation back to the original language of the narratives. Additionally, a third-party translator compared the original narratives

with the back-translation and made final edits to the English translation (Campbell et al., 1970). The translators annotated cultural references in the original narratives to ensure minimal misinterpretation in later coding and analyses.

We designed our coding scheme of appraisal dimensions based on Smith and Ellsworth's (1985) model and other appraisal theories (e.g., Frijda et al., 1989; Reisenzein & Hofmann, 1990; Roseman et al., 1990; Scherer, 1982a). We incorporated the following non-mutually exclusive categories into our coding scheme: (*a*) self-agency, (*b*) other-agency, (*c*) situational-agency, (*d*) anticipated effort, (*e*) arousal, (*f*) attentional activity, (*g*) certainty, (*h*) commitment, (*i*) compatibility with external standards, (*j*) compatibility with internal standards, (*k*) discrepancy from expectation, (*l*) dominance, (*m*) expectedness, (*n*) familiarity, (*o*) goal-conduciveness, (*p*) goal-path obstacle, (*q*) helplessness, (*r*) identity, (*s*) importance, (*t*) interestingness, (*u*) legitimacy, (*v*) modifiability, (*w*) pleasantness, (*x*) powerfulness, (*y*) safety, (*z*) self-esteem, (*aa*) someone else (influence on someone else's well-being, see Frijda et al., 1989), and (*ab*) urgency. We determined our final choices of appraisal dimension items by reading the narratives and adjusting the categories to better fit the content.

We instructed two English-speaking research assistants to code each non-mutually exclusive appraisal dimension (category *a* through *ab*) for each awe narrative on a scale from 1 (*Not at all*) to 5 (*Extremely*). They coded all of the narratives independently of each other to prevent being biased by each other's responses. Narratives that were too vague for coders to determine their appraisal dimensions were coded as 0 (*Not apparent*). The two research assistants also coded the primary agency (category *ac*) of each awe narrative into one of three mutually exclusive categories: (1) self-agency, (2) other-agency, and (3) situational-agency. If the coders could not determine a primary agency because two or more forms of agency were

equivalently predominant in the narrative, they were instructed to code the entry as (4) other. If the narrative was too vague or incoherent for the coders to discern any agency, it was coded as (0) not applicable. Two other English-speaking research assistants then compared and reviewed the analyses from the first two coders. Finally, all four research assistants resolved discrepancies among their codes through discussion. The Cronbach's $\alpha$ coefficient between the first two coders was 0.8769, indicating an acceptable level of interrater reliability (Nunnally, 1978).

Appendices A and B provide a coding manual with more in-depth definitions of each category and examples of narratives.

## Results

### Agency

Of the 2,604 participants, 11 did not provide narratives that were indicative of primary agency, leaving 2,593 participants in the sample. Table 1 presents the frequencies with which self-agency, other-agency, and situational-agency were coded as the primary agency in each country. In line with Hypothesis 1a, we found that the Individualism Index (IDV) scores were significantly positively correlated with the frequency with which self-agency was identified as the primary agency: participants with higher IDV scores were more likely to identify self-agency as the primary agency of their awe experiences, $b$=0.320, $SE$=0.062, $F(1, 24)$=26.887, $p$<.001. On the contrary, IDV scores were significantly negatively correlated with other-agency frequency, $b$=-0.196, $SE$=0.061, $F(1, 24)$=10.318, $p$<.01. We found no significant association between IDV scores and situational-agency frequency, $b$=-0.124, $SE$=0.075, $F(1, 24)$=2.712, $p$=.113.

In order to examine self-agency, other-agency, and situational-agency ratings on an individual level, we ran a series of hierarchical linear regressions with fixed effects controlling

for variance among countries. We constructed models to predict levels of self-agency, other-agency, and situational-agency in an awe narrative from one's IDV score with an added random intercept for country of residence. Consistent with Hypothesis 1b, participants with higher IDV scores reported higher levels of self-agency, $b$=0.016, $SE$=0.002, $\chi^2(1)$=44.537, $p$<.001, lower levels of other-agency, $b$=-0.013, $SE$=0.002, $\chi^2(1)$=19.350, $p$<.001, and lower levels of situational-agency, $b$=-0.018, $SE$=0.003, $\chi^2(1)$=28.277, $p$<.001 (see Table 2). Furthermore, as illustrated in Table 3, when controlling for religiosity, life expectancy, birth rate, and GDP per capita, these relationships remained significant: self-agency, $b$=0.017, $SE$=0.003, $\chi^2(1)$=28.828, $p$<.001; other-agency, $b$=-0.011, $SE$=0.004, $\chi^2(1)$=8.343, $p$<.01; situational-agency, $b$=-0.020, $SE$=0.004, $\chi^2(1)$=22.364, $p$<.001. These results further confirmed that people from more individualistic cultures attributed their awe experiences to themselves to a greater extent. On the other hand, these individuals attributed their experiences to a lesser degree to other people or to the situation.

Following the hierarchical linear regression models, we also constructed linear regression models to replicate the results on a country level. We used the country's IDV score to predict its mean levels of self-agency, other-agency, and situational-agency. Consistent with the hierarchical linear regression analyses, countries with higher IDV scores showed higher levels of self-agency, $b$=0.016, $SE$=0.002, $F(1,24)$=44.758, $p$<.001, lower levels of other-agency, $b$=-0.0134, $SE$=0.003, $F(1,24)$=19.364, $p$<.001, and lower levels of situational-agency, $b$=-0.018, $SE$=0.003, $F(1,24)$=28.283, $p$<.001. These results are presented in Table 4 and illustrated in Figure 2.

**Other Appraisal Dimensions**

Similarly, we constructed a series of hierarchical linear regression models to predict levels of the remaining appraisal dimensions from individuals' IDV scores. As presented in Table 2, participants with higher IDV scores reported higher levels of arousal, $b$=0.022, $SE$=0.005, $\chi^2(1)=20.499$, $p<.001$, dominance, $b$=0.024, $SE$=0.004, $\chi^2(1)=30.358$, $p<.001$, and powerfulness, $b$=0.024, $SE$=0.003, $\chi^2(1)=55.547$, $p<.001$. On the other hand, higher IDV scores predicted lower levels of commitment, $b$=-0.011, $SE$=0.004, $\chi^2(1)=8.9533$, $p<.01$, identity, $b$=-0.015, $SE$=0.002, $\chi^2(1)=90.754$, $p<.001$, and someone else (influence on someone else's well-being, see Frijda et al., 1989), $b$=-0.018, $SE$=0.003, $\chi^2(1)=31.599$, $p<.001$. Finally, participants' IDV scores did not predict the level of helplessness in their awe experiences, $b$=-0.004, $SE$=0.003, $\chi^2(1)=2.031$, $p$=.154. Again, after controlling for religiosity, life expectancy, birth rate, and GDP per capita, we replicated the relationships between IDV scores and the above-mentioned appraisal dimensions (see Table 3 for results).

In the same vein, we constructed linear regression models to predict levels of these appraisal dimensions from each country's IDV score to replicate the results on a country level. In keeping with the hierarchical linear regression analyses, countries with higher IDV scores showed higher levels of arousal, $b$=0.022, $SE$=0.005, $F(1,24)=20.491$, $p<.001$, dominance, $b$=0.024, $SE$=0.004, $F(1,24)=30.330$, $p<.001$, and powerfulness, $b$=0.0234, $SE$=0.003, $F(1,24)=55.626$, $p<.001$. Contrarily, higher IDV scores predicted lower levels of commitment, $b$=-0.011, $SE$=0.004, $F(1,24)=8.995$, $p<.01$, identity, $b$=-0.015, $SE$=0.002, $F(1,24)=92.243$, $p<.001$, and someone else (influence on someone else's well-being, see Frijda et al., 1989), $b$=-0.018, $SE$=0.003, $F(1,24)=31.710$, $p<.001$. Again, we found no significant association between IDV scores and the level of helplessness, $b$=-0.042, $SE$=0.003, $F(1,24)=2.028$, $p$=.167. These results are displayed in Table 4.

Exploratory analyses of the remaining appraisal dimensions revealed additional cultural variations in the appraisal of awe experiences. Specifically, we found that participants with higher IDV scores reported higher levels of attentional activity, $b$=0.008, $SE$=0.002, $\chi^2(1)=21.742$, $p<.001$, modifiability, $b$=0.010, $SE$=0.003, $\chi^2(1)=13.287$, $p<.001$, pleasantness, $b$=0.011, $SE$=0.003, $\chi^2(1)=11.682$, $p<.001$, as well as self-esteem, $b$=0.032, $SE$=0.005, $\chi^2(1)=45.027$, $p<.001$. Additionally, we discovered a significant negative correlation between participants' IDV scores and the level of familiarity in their awe experiences, $b$=-0.007, $SE$=0.002, $\chi^2(1)=14.328$, $p<.001$. We present the results of these hierarchical linear regression analyses in Table 2. Furthermore, these relationships remained significant after controlling for religiosity, life expectancy, birth rate, and GDP per capita (see Table 3). We also replicated these results on a country-level and the aforementioned correlations remained significant, as shown in Table 4.

Lastly, we conducted preliminary analyses to examine whether the countries within the East Asian cultural sphere were representative of all collectivistic countries, considering that these cultures diverged from different roots compared to other collectivistic countries such as Chile, Turkey, and Russia. After excluding the Sinospherical countries—China, Indonesia, Japan, Singapore, and South Korea—from the dataset, we reconducted the hierarchical linear regression analyses to predict levels of the appraisal dimensions from participants' IDV scores. We found that some correlations were less significant or no longer significant: other-agency, $b$=-0.011, $SE$=0.004, $\chi^2(1)=9.3983$, $p<.01$; arousal, $b$=0.010, $SE$=0.005, $\chi^2(1)=4.969$, $p<.05$; anticipated effort, $b$=0.005, $SE$=0.007, $\chi^2(1)=0.440$, $p=.507$; attentional activity, $b$=0.007, $SE$=0.002, $\chi^2(1)=9.273$, $p<.01$; expectedness, $b$=0.08, $SE$=0.005, $\chi^2(1)=2.603$, $p=.107$; familiarity, $b$=-0.005, $SE$=0.002, $\chi^2(1)=3.399$, $p<.1$; modifiability, $b$=0.005, $SE$=0.003,

$\chi^2(1)=2.537$, $p=.111$. On the other hand, the correlation between IDV scores and the level of legitimacy became more significant, $b=0.010$, $SE=0.004$, $\chi^2(1)=6.854$, $p<.01$. Finally, some new significant correlations have emerged: helplessness, $b=-0.010$, $SE=0.004$, $\chi^2(1)=7.745$, $p<.01$; certainty, $b=0.007$, $SE=0.003$, $\chi^2(1)=5.566$, $p<.05$; compatibility with internal standards, $b=0.012$, $SE=0.005$, $\chi^2(1)=5.817$, $p<.05$. Table 5 presents the results of these hierarchical linear regression analyses.

## Discussion

Human emotions appear to have evolved to serve socially adaptive purposes. The components of emotion, such as appraisal, vary across cultures to help individuals fulfill the demands of the specific socio-cultural context. The emerging science of awe, however, has largely overlooked the emotional experience of awe beyond Western populations, leaving open the possibility of cultural variations. In the present investigation we examined different patterns of awe appraisals among people from individualistic and collectivistic countries. To study this, we established a coding scheme consisting of 28 appraisal dimensions (e.g., Frijda et al., 1989; Roseman et al., 1990; Scherer, 1982a; Smith & Ellsworth, 1985; see Appendix A for all appraisal dimensions and their respective citations). We then rated autobiographical narratives provided by international participants ($N$ = 2,764) from 26 countries along these 28 appraisal dimensions. In addition, we coded the primary agency of each recollection into self-, other-, or situational-agency. Finally, we compared the frequencies of the observer-coded primary agency and the average levels of appraisal dimensions among participants from 26 cultures. Overall, our study suggests that cultural orientations, specifically along the continuum of individualism to collectivism, influence the appraisal of awe.

More specifically, in keeping with our first hypothesis, we uncovered significant relationships between the Individualism Index (IDV) scores and self-, other-, and situational-agency. Individualists, compared to collectivists, more frequently identified self-agency and less frequently identified other-agency as the primary agency in their awe experiences (Hypothesis 1a). However, contrary to our hypothesis, we found no significant association between IDV and situational-agency frequency. Additionally, people from more individualistic cultures reported a higher level of self-agency and lower levels of other- and situational-agency in their awe narratives (Hypothesis 1b). The discoveries of self- and other-agency frequencies and levels were in accordance with theoretical claims regarding cultural construals of the self, which maintain that individualists perceive themselves as independent and unique, whereas collectivists integrate themselves into appropriate social relationships or contexts (Fiske & Yamamoto, 2005; Klarin et al., 2012; Markus & Kitayama, 1991a, 1991b; Triandis et al. 1988; Wheeler et al., 1989). Although the situational-agency frequency was statistically proximate among all countries, the mean level of this agency was significantly lower in individualistic countries. This negative correlation between IDV and situational-agency corresponded with previous findings that individualists, compared to collectivists, incorporate less information from the external environment when interpreting events and emotions (Ji et al., 2000; Masuda & Nisbett, 2001; Masuda et al., 2008; Miyamoto et al., 2006; Wang, 2010). It is possible that the frequency test was more stringent than the mean level test, as it required participants to choose one of three mutually exclusive agency categories. Participants from collectivistic countries reported high levels of both other- and situational-agency, but the majority of them selected other-agency rather than situational-agency as the primary agency in their awe experiences.

In line with current theories regarding the culturally constructed self, we also found that participants from more individualistic countries indicated lower levels of commitment, identity, and influence on someone else's well-being in their recollections (Hypotheses 2a-c). Furthermore, we discovered that more individualistic participants felt more powerful and dominant in their awe experiences (Hypotheses 2d-e). These results echoed the proposition that individualists aim to act on and thereby influence the external circumstances to fulfill their personal demands, while collectivists seek to assimilate into their surroundings through accommodating the needs of others (Morling et al., 2002; Oishi et al., 1998; Schwartz, 1992; Schwartz & Sagiv, 1995; Weisz et al., 1984). In addition, consistent with the argument put forth by Tsai and colleagues, which asserts that individualists prefer high-arousal positive states whereas collectivists value low-arousal positive states, our results illustrated that more individualistic participants experienced a higher level of arousal or stimulation (Hypothesis 2g). However, contrary to Hypothesis 2f, we did not observe a significant relationship between IDV and level of helplessness. We presumed that the lack of threat-based, negatively-valenced awe narratives contributed to a universally low rating of helplessness across the 26 countries. Taken as a whole, these findings lend support to our central hypothesis that the appraisals of awe vary across cultures.

Exploratory analyses revealed other appraisal dimensions that displayed divergent patterns across different cultures. Notably, people from more individualistic countries documented a greater increase in self-esteem in their awe experiences. One plausible explanation is that individualists experience a more pronounced concern when evaluating the self, which motivates them to actively take a positive stance towards themselves and elaborate favorable information relative to negative information about themselves (Heine, 2003, 2005; Heine &

Hamamura, 2007; Schmitt & Allik, 2005). In contrast, collectivists experience different concerns regarding themselves, such as self-improvement and commitment to the community (Crocker & Park, 2004; Heine & Lehman, 2004; Norenzayan & Heine, 2004). Additionally, prior studies have yielded ample evidence suggesting that East Asians implement less self-enhancing strategies to fulfill cultural expectations of modesty and humbleness (Kim, Lee, & Gim, 2011; Kim, Song, & Lee, 2008; Lee et al., 2014). As a result, individualistic cultures foster higher levels of self-esteem than collectivistic cultures, and this trend potentially manifests itself in the context of various emotional experiences such as awe (Crocker et al., 1998; Markus & Kitayama, 1991a; Spencer-Rodgers et al., 2004). We also found that individualists reported a higher level of attentional activity in their awe experiences compared to collectivists. This is likely due to the fact that collectivists spread more attention to the context of the experience, whereas individualists focus more on the salient, ongoing event itself (Ji et al., 2000; Masuda & Nisbett, 2001; Masuda et al., 2008; Miyamoto et al., 2006; Wang, 2010). Our coding also revealed that more individualistic participants interpreted their awe experiences as less familiar, more immutable, and more pleasant. Although we could not explain these observations with existing empirical literature, future research should further illuminate the possible mechanisms underlying these relationships. These exploratory findings, together with our main findings, highlight the nuances in awe appraisal across cultures and contribute to the growing literature underlining cultural variations in emotion.

Finally, our preliminary analyses demonstrated that the relationships between IDV and some appraisal dimensions changed after removing the Sinospherical countries from the dataset. For example, the positive correlation between IDV and arousal became less significant after removing the Asian countries. This effect may be present because people from the East Asian

cultural sphere, among all collectivistic individuals, particularly appreciate low-arousal positive emotions such as calmness, compared to high-arousal positive states such as excitement (Tsai et al., 2006). However, other collectivistic cultures might value the stimulating aspects of their awe experiences more so than countries within the East Asian cultural sphere. Additionally, a significant relationship between IDV and helplessness emerged after excluding the Sinospherical countries from the analyses. This is possibly due to the higher number of negatively-valenced awe recollections provided by Hispanic participants, most of whom are from more collectivistic cultures such as Chile, Mexico, and Argentina. While these participants supplied more threat-based awe narratives, participants who responded in other languages mainly described positively-valenced awe experiences. We suspect that the Spanish term for awe, asombro, carries more negative connotations, which in turn predisposed the Spanish-speaking participants to recall more negatively-valenced awe experiences than other participants. Taken together, these results offered initial evidence that East Asian countries might not be entirely representative of all collectivistic regions in emotion research. Future studies should build on these preliminary findings to continue uncovering the diversity of collectivistic cultures and how it manifests in the divergent patterns of awe appraisals.

**Limitations and Future Directions**

There are several limitations and future directions that merit attention. First of all, the sample size from each country was relatively small, with an average of 106 participants. Additional work should include a larger participant pool to account for more potential cultural variance. Moreover, in the present investigation, we analyzed cultural orientations with respect to the participants' countries of residence. Although scholars commonly define culture in terms of geographic location (Shweder & Le Vine, 1984), we acknowledge that more nuanced cultural

differences exist within a country or a region (Dilworth-Anderson et al., 2002; Hall, 2002; Tsai et al., 2006). Future research should take into account other factors, such as ethnicity, that are likely to impact individuals' cultural orientations.

Secondly, the definition and connotations of awe vary across cultures and languages. For example, the Merriam-Webster Collegiate Dictionary defines awe as "an emotion variously combining dread, veneration, and wonder that is inspired by authority or by the sacred or sublime." In the United States, current lay conceptions of awe are predominantly positive (Shiota et al., 2007; Stellar et al., 2017), and emotion researchers largely depict awe as a positive emotion (Campos et al., 2013; Shiota et al., 2006; Smith et al., 2014). Nevertheless, in some languages, awe is more frequently tinged with threat-related elements (White, 2017). For example, according to the Contemporary Chinese Dictionary, the Chinese term of awe, 敬畏, is a combination of respect and fear. Additionally, the Spanish term of awe, asombro, has ambivalent valence and is commonly mixed with fear (Rodríguez-Rey et al., 2016). Moreover, it is possible that culturally-specific prototypes of awe exist (e.g., Elasri, 2018; Kövecses et al., 2003; Mandal et al., 1986; Shaver, Wu, & Schwartz, 1992; Shaver, Schwartz, et al., 1987). In the present study, to account for the distinct connotations of awe, we oriented participants to a universal conception of awe through a theoretical definition (Keltner & Haidt, 2003) and an emoticon depicting the facial expression of awe (Shiota et al., 2003). However, the different cultural and linguistic representations of awe and their influences on individuals' appraisals of emotions warrant further investigation.

Furthermore, with respect to the data collection and coding, our findings were restricted in two ways. First, participants described a time when they had experienced the emotion of awe. It is possible that their current emotions, coping efforts, and personality traits distorted their

recollection of past events (Levine & Safer, 2002). Second, since our prompt did not specifically ask participants to narrate how they interpreted their experiences, many recollections lacked explicit details regarding the appraisals of awe. As a result, we coded the subjective content of each account for all appraisal dimensions that would, *in most cases*, correspond with the participant's description. Because of the high between-coder reliability we attained (Cronbach's $\alpha = 0.8769$), we remain confident in the objectivity and accuracy of our ratings. Nevertheless, building on the present study, future research should explore other approaches to operationalize appraisal dimensions of awe.

Finally, the majority of the narratives in our collection portrayed positively-valenced awe experiences. Future studies should extend our findings to different variants of awe, such as the threat-based awe that arises in response to natural disasters or warfare (McDougall, 1936; Gordon et al., 2016). These negatively-valenced awe experiences, unlike the pleasurable awe experiences captured in the present investigation, are imbued with fear and anxiety and thus may produce different appraisals. It would be intuitive to predict that some appraisal dimensions, such as the ones related to hierarchy, power, and safety, would display different patterns in fearful awe experiences.

**Conclusion**

Awe is a transcending emotional experience that arises as one confronts the vastness and complexity of the world. The present investigation examined and discovered a number of systematic variations in the appraisal dimensions of awe among individuals from individualistic and collectivistic cultures. For example, we demonstrated that people from more individualistic countries were more inclined to attribute their awe experiences to themselves and less likely to attribute those experiences to other people or to the situation. Overall, the present results shed

new light on the robust effect of cultural orientation on the appraisal of awe and encourage future research to further uncover the ways in which cultures shape our emotional experiences.

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## Tables and Figures

**Table 1**

*Observer Coded Primary Agency Frequencies Across 26 Countries*

| Country | IDV[a] | Life Expectancy | Birth Rate | Logged GDP Per Capita | *N*[b] | Self-Agency | Other-Agency | Situational-Agency |
|---|---|---|---|---|---|---|---|---|
| United States | 91 | 78.5 | 12.5 | 4.75 | 101 | 37.62 | 39.60 | 22.77 |
| Australia | 90 | 82.9 | 12.1 | 4.82 | 95 | 24.21 | 31.58 | 44.21 |
| United Kingdom | 89 | 81.4 | 12.1 | 4.61 | 100 | 21.00 | 36.00 | 43.00 |
| Canada | 80 | 82.8 | 10.3 | 4.66 | 100 | 32.00 | 34.00 | 34.00 |
| Netherlands | 80 | 81.6 | 10.9 | 4.69 | 94 | 20.21 | 47.87 | 31.91 |
| Sweden | 71 | 82.4 | 12.0 | 4.68 | 100 | 35.00 | 27.00 | 38.00 |
| France | 71 | 82.9 | 12.3 | 4.61 | 97 | 40.21 | 41.24 | 18.56 |
| Ireland | 70 | 81.5 | 14.5 | 4.74 | 96 | 36.46 | 32.29 | 31.25 |
| Norway | 69 | 82.5 | 12.2 | 4.84 | 99 | 34.34 | 38.38 | 27.27 |
| Germany | 67 | 81.0 | 8.5 | 4.67 | 81 | 25.93 | 53.09 | 20.99 |
| South Africa | 65 | 63.6 | 20.5 | 4.12 | 97 | 29.90 | 45.36 | 24.74 |
| Switzerland | 64 | 83.3 | 10.5 | 4.77 | 104 | 23.08 | 35.58 | 41.35 |
| Austria | 55 | 81.9 | 9.5 | 4.67 | 99 | 13.13 | 46.46 | 40.40 |
| Spain | 51 | 83.1 | 9.4 | 4.54 | 102 | 11.76 | 47.06 | 41.18 |
| India | 48 | 68.8 | 19.3 | 3.79 | 114 | 24.56 | 35.96 | 39.47 |
| Argentina | 46 | 76.9 | 17.0 | 4.35 | 101 | 17.82 | 48.51 | 33.60 |
| Japan | 46 | 84.2 | 7.8 | 4.58 | 95 | 8.42 | 51.58 | 40.00 |
| Russia | 39 | 71.9 | 11.3 | 4.40 | 102 | 21.57 | 31.37 | 47.06 |
| Brazil | 38 | 75.1 | 14.3 | 4.19 | 112 | 25.89 | 50.00 | 24.11 |
| Turkey | 37 | 76.4 | 16.0 | 4.31 | 98 | 19.39 | 42.86 | 37.76 |
| Mexico | 30 | 76.6 | 18.5 | 4.24 | 105 | 5.71 | 53.33 | 40.95 |
| Chile | 23 | 79.5 | 13.7 | 4.37 | 104 | 6.73 | 44.23 | 49.04 |
| Singapore | 20 | 82.9 | 8.4 | 4.93 | 100 | 13.00 | 58.00 | 29.00 |
| China | 20 | 76.4 | 12.4 | 4.15 | 98 | 5.10 | 37.76 | 57.14 |
| South Korea | 18 | 82.7 | 8.4 | 4.56 | 101 | 10.89 | 50.50 | 38.61 |
| Indonesia | 14 | 69.3 | 16.4 | 4.05 | 98 | 12.24 | 57.14 | 30.61 |

*Note.* The primary agency frequencies are expressed in percentages.

[a]Hofstede's Individualism Index Scores

[b]Narratives that were not indicative of primary agency were excluded.

**Table 2**

*Hierarchical Linear Regression Analysis of Appraisal Dimensions with Fixed Effects for Country*

| Appraisal Dimension | *b* | *SE* | Wald $\chi^2$ | 95 CI |
|---|---|---|---|---|
| **Self-Agency** | 0.0156*** | 0.0023 | 44.5370 | [0.0110, 0.0202] |
| **Other-Agency** | -0.0134*** | 0.0030 | 19.3500 | [-0.0194, -0.0074] |
| **Situational-Agency** | -0.0176*** | 0.0033 | 28.2770 | [-0.0241, -0.0111] |
| **Arousal** | 0.0218*** | 0.0048 | 20.4990 | [0.0124, 0.0313] |
| **Dominance** | 0.0238*** | 0.0043 | 30.3580 | [0.0153, 0.0322] |
| **Identity** | -0.0150*** | 0.0016 | 90.7540 | [-0.0180, -0.0119] |
| **Powerfulness** | 0.0238*** | 0.0032 | 55.5470 | [0.0176, 0.0301] |
| **Someone Else** | -0.0183*** | 0.0032 | 31.5990 | [-0.0246, -0.0119] |
| **Commitment** | -0.0112** | 0.0037 | 8.9533 | [-0.0186, -0.0039] |
| **Helplessness** | -0.0042 | 0.0030 | 2.0313 | [-0.0100, 0.0016] |
| Attentional Activity | 0.0079*** | 0.0017 | 21.7420 | [0.0046, 0.0113] |
| Familiarity | -0.0072*** | 0.0019 | 14.3280 | [-0.0109, -0.0035] |
| Modifiability | 0.0095*** | 0.0026 | 13.2870 | [0.0044, 0.0145] |
| Pleasantness | 0.0113*** | 0.0033 | 11.6820 | [0.0048, 0.0177] |
| Self-Esteem | 0.0318*** | 0.0047 | 45.0270 | [0.0225, 0.0410] |
| Expectedness | 0.0073* | 0.0036 | 4.0357 | [0.0002, 0.0144] |
| Legitimacy | 0.0070* | 0.0029 | 5.6945 | [0.0013, 0.0128] |
| Anticipated Effort | 0.0083. | 0.0048 | 3.0127 | [-0.0011, 0.0177] |
| Certainty | 0.0034 | 0.0022 | 2.4054 | [-0.0009, 0.0077] |
| Compatibility with External Standards | 0.0018 | 0.0043 | 0.1646 | [-0.0067, 0.0103] |
| Compatibility with Internal Standards | 0.0059 | 0.0038 | 2.4160 | [-0.0016, 0.0134] |
| Discrepancy from Expectation | -0.0013 | 0.0058 | 0.0489 | [-0.0126, 0.0100] |
| Goal-Conduciveness | 0.0057 | 0.0042 | 1.8548 | [-0.0025, 0.0139] |
| Goal-Path Obstacle | -0.0019 | 0.0023 | 0.7227 | [-0.0064, 0.0025] |
| Importance | 0.0055 | 0.0039 | 1.9506 | [-0.0022, 0.0132] |
| Interestingness | 0.0051 | 0.0031 | 2.6641 | [-0.0010, 0.0112] |
| Safety | 0.0062 | 0.0053 | 1.3726 | [-0.0042, 0.0166] |
| Urgency | 0.0036 | 0.0060 | 0.3654 | [-0.0081, 0.0154] |

*Note.* Bolded appraisal dimensions were included in Hypotheses 1 and 2; other appraisal dimensions were included in the exploratory analyses. Each appraisal dimension was coded on a scale from 1 (*Not at all*) to 5 (*Extremely*).

.p < .1. *p < .05. **p < .01. ***p < .001.

**Table 3**

*Hierarchical Linear Regression Analysis of Appraisal Dimensions with Fixed Effects for Country, Controlled for Religiosity, Life Expectancy, Birth Rate, and Logged GDP Per Capita*

| Appraisal Dimension | *b* | *SE* | Wald $\chi^2$ | 95 CI |
|---|---|---|---|---|
| **Self-Agency** | 0.0169** | 0.0031 | 28.8279 | [0.0107, 0.0230] |
| **Other-Agency** | -0.0110** | 0.0038 | 8.3426 | [-0.0185, -0.0035] |
| **Situational-Agency** | -0.0196*** | 0.0041 | 22.3640 | [-0.0277, -0.0115] |
| **Arousal** | 0.0236*** | 0.0063 | 14.1078 | [0.0113, 0.0360] |
| **Dominance** | 0.0239*** | 0.0055 | 19.0496 | [0.0132, 0.0346] |
| **Identity** | -0.0169*** | 0.0019 | 79.3977 | [-0.0206, -0.0132] |
| **Powerfulness** | 0.0226*** | 0.0043 | 27.2085 | [0.0141, 0.0311] |
| **Someone Else** | -0.0202*** | 0.0042 | 23.2493 | [-0.0285, -0.0120] |
| **Commitment** | -0.0123** | 0.0045 | 7.2827 | [-0.0211, -0.0034] |
| **Helplessness** | -0.0020 | 0.0032 | 0.3767 | [-0.0083, 0.0043] |
| Attentional Activity | 0.0079*** | 0.0023 | 11.2447 | [0.0033, 0.0125] |
| Familiarity | -0.0082*** | 0.0023 | 12.4447 | [-0.0127, -0.0036] |
| Self-Esteem | 0.0307*** | 0.0061 | 25.2713 | [0.0187, 0.0426] |
| Modifiability | 0.0080* | 0.0034 | 5.5713 | [0.0014, 0.0147] |
| Compatibility with Internal Standards | 0.0097. | 0.0051 | 3.6913 | [-0.0002, 0.0197] |
| Interestingness | 0.0068. | 0.0036 | 3.5751 | [-0.0002, 0.0138] |
| Pleasantness | 0.0073. | 0.0039 | 3.5198 | [-0.0003, 0.0150] |
| Anticipated Effort | 0.0066 | 0.0064 | 1.0791 | [-0.0059, 0.0192] |
| Certainty | 0.0034 | 0.0027 | 1.5826 | [-0.0019, 0.0087] |
| Compatibility with External Standards | 0.0085 | 0.0054 | 2.4779 | [-0.0021, 0.0190] |
| Discrepancy from Expectation | 0.0048 | 0.0068 | 0.4987 | [-0.0086, 0.0183] |
| Expectedness | 0.0043 | 0.0046 | 0.8520 | [-0.0048, 0.0133] |
| Goal-Conduciveness | 0.0085 | 0.0057 | 2.2582 | [-0.0026, 0.0196] |
| Goal-Path Obstacle | 0.0019 | 0.0028 | 0.4383 | [-0.0036, 0.0073] |
| Importance | 0.0059 | 0.0049 | 1.4387 | [-0.0037, 0.0155] |
| Legitimacy | 0.0028 | 0.0034 | 0.6665 | [-0.0039, 0.0000] |
| Safety | 0.0019 | 0.0063 | 0.0898 | [-0.0105, 0.0143] |
| Urgency | 0.0038 | 0.0081 | 0.2179 | [-0.0121, 0.0197] |

*Note.* Bolded appraisal dimensions were included in Hypotheses 1 and 2; other appraisal dimensions were included in the exploratory analyses. Each appraisal dimension was coded on a scale from 1 (*Not at all*) to 5 (*Extremely*).

.p < .1. *p < .05. **p < .01. ***p < .001.

**Table 4**

*Linear Regression Analysis of Appraisal Dimensions*

| Appraisal Dimension | *b* | *SE* | *F* | 95 CI |
|---|---|---|---|---|
| **Self-Agency** | 0.0156*** | 0.0023 | 44.7580 | [0.0108, 0.0204] |
| **Other-Agency** | -0.0134*** | 0.0030 | 19.3640 | [-0.0197, -0.0071] |
| **Situational-Agency** | -0.0176*** | 0.0033 | 28.2830 | [-0.0244, -0.0108] |
| **Arousal** | 0.0218*** | 0.0048 | 20.4910 | [0.0119, 0.0318] |
| **Dominance** | 0.0238*** | 0.0043 | 30.3300 | [0.0149, 0.0327] |
| **Identity** | -0.0150*** | 0.0016 | 92.2430 | [-0.0182, -0.0117] |
| **Powerfulness** | 0.0238*** | 0.0032 | 55.6260 | [0.0172, 0.0304] |
| **Someone Else** | -0.0183*** | 0.0032 | 31.7100 | [-0.0249, -0.0116] |
| **Commitment** | -0.0112** | 0.0037 | 8.9946 | [-0.0189, -0.0035] |
| **Helplessness** | -0.0042 | 0.0029 | 2.0281 | [-0.0103, 0.0019] |
| Attentional Activity | 0.0079*** | 0.0017 | 21.7360 | [0.0044, 0.0115] |
| Familiarity | -0.0072*** | 0.0019 | 14.3990 | [-0.0111, 0.0033] |
| Self-Esteem | 0.0318*** | 0.0047 | 45.0230 | [0.0220, 0.0415] |
| Modifiability | 0.0095** | 0.0026 | 13.3360 | [0.0041, 0.0148] |
| Pleasantness | 0.0113** | 0.0033 | 11.7310 | [0.0045, 0.0180] |
| Legitimacy | 0.0070* | 0.0029 | 5.7365 | [0.0010, 0.0130] |
| Anticipated Effort | 0.0083. | 0.0048 | 3.0166 | [-0.0016, 0.0182] |
| Expectedness | 0.0073. | 0.0036 | 4.0579 | [-0.0002, 0.0148] |
| Certainty | 0.0034 | 0.0022 | 2.3949 | [-0.0011, 0.0079] |
| Compatibility with External Standards | 0.0018 | 0.0043 | 0.1650 | [-0.0072, 0.0107] |
| Compatibility with Internal Standards | 0.0059 | 0.0038 | 2.4068 | [-0.0020, 0.0138] |
| Discrepancy from Expectation | -0.0013 | 0.0058 | 0.0492 | [-0.0132, 0.0106] |
| Goal-Conduciveness | 0.0057 | 0.0042 | 1.8573 | [-0.0029, 0.0143] |
| Goal-Path Obstacle | -0.0019 | 0.0023 | 0.7320 | [-0.0066, 0.0027] |
| Importance | 0.0055 | 0.0039 | 1.9462 | [-0.0026, 0.0136] |
| Interestingness | 0.0051 | 0.0031 | 2.6577 | [-0.0014, 0.0115] |
| Safety | 0.0062 | 0.0053 | 1.3726 | [-0.0047, 0.0171] |
| Urgency | 0.0036 | 0.0060 | 0.3646 | [-0.0088, 0.0160] |

*Note.* Bolded appraisal dimensions were included in Hypotheses 1 and 2; other appraisal dimensions were included in the exploratory analyses. Each appraisal dimension was coded on a scale from 1 (*Not at all*) to 5 (*Extremely*).

.p < .1. *p < .05. **p < .01. ***p < .001.

**Table 5**

*Hierarchical Linear Regression Analysis of Appraisal Dimensions with Fixed Effects for Country, Excluding China, Indonesia, Japan, Singapore, and South Korea*

| Appraisal Dimension | *b* | *SE* | Wald $\chi^2$ | 95 CI |
|---|---|---|---|---|
| **Self-Agency** | 0.0141*** | 0.0031 | 19.9610 | [0.0079, 0.0202] |
| **Other-Agency** | -0.0114** | 0.0037 | 9.3983 | [-0.0186, -0.0041] |
| **Situational-Agency** | -0.0183*** | 0.0042 | 19.0520 | [-0.0265. -0.0101] |
| **Dominance** | 0.0220*** | 0.0060 | 13.4900 | [0.0103, 0.0338] |
| **Identity** | -0.0142*** | 0.0022 | 40.1610 | [-0.0186, -0.0098] |
| **Powerfulness** | 0.0191*** | 0.0041 | 21.9410 | [0.0111, 0.0271] |
| **Someone Else** | -0.0165*** | 0.0044 | 14.2960 | [-0.0251, -0.0079] |
| **Commitment** | -0.0159** | 0.0052 | 9.2603 | [-0.0261, -0.0057] |
| **Helplessness** | -0.0099** | 0.0035 | 7.7450 | [-0.0168, -0.0029] |
| **Arousal** | 0.0101* | 0.0045 | 4.9685 | [0.0012, 0.0189] |
| Pleasantness | 0.0144*** | 0.0043 | 11.2240 | [0.0060, 0.0228] |
| Self-Esteem | 0.0242*** | 0.0056 | 18.9800 | [0.0133, 0.0351] |
| Attentional Activity | 0.0071** | 0.0023 | 9.2732 | [0.0025, 0.0116] |
| Legitimacy | 0.0097** | 0.0037 | 6.8536 | [0.0024, 0.0169] |
| Certainty | 0.0070* | 0.0030 | 5.5658 | [0.0012, 0.0128] |
| Compatibility with Internal Standards | 0.0122* | 0.0051 | 5.8168 | [0.0023, 0.0222] |
| Familiarity | -0.0045. | 0.0024 | 3.3993 | [-0.0092, 0.0003] |
| Anticipated Effort | 0.0046 | 0.0069 | 0.4404 | [-0.0090, 0.0181] |
| Compatibility with External Standards | 0.0033 | 0.0047 | 0.4974 | [-0.0059, 0.0126] |
| Discrepancy from Expectation | -0.0049 | 0.0080 | 0.3787 | [-0.0206, 0.0108] |
| Expectedness | 0.0082 | 0.0051 | 2.6028 | [-0.0018, 0.0182] |
| Goal-Conduciveness | 0.0038 | 0.0058 | 0.4326 | [-0.0075, 0.0151] |
| Goal-Path Obstacle | -0.0024 | 0.0031 | 0.6102 | [-0.0085, 0.0036] |
| Importance | 0.0030 | 0.0056 | 0.2859 | [-0.0080, 0.0140] |
| Interestingness | 0.0025 | 0.0045 | 0.3063 | [-0.0063, 0.0112] |
| Modifiability | 0.0051 | 0.0032 | 2.5366 | [-0.0012, 0.0113] |
| Safety | 0.0113 | 0.0073 | 2.4376 | [-0.0029, 0.0256] |
| Urgency | 0.0011 | 0.0087 | 0.0172 | [-0.0159, 0.0181] |

*Note.* Bolded appraisal dimensions were included in Hypotheses 1 and 2; other appraisal dimensions were included in the exploratory analyses. Each appraisal dimension was coded on a scale from 1 (*Not at all*) to 5 (*Extremely*).

.p < .1. *p < .05. **p < .01. ***p < .001.

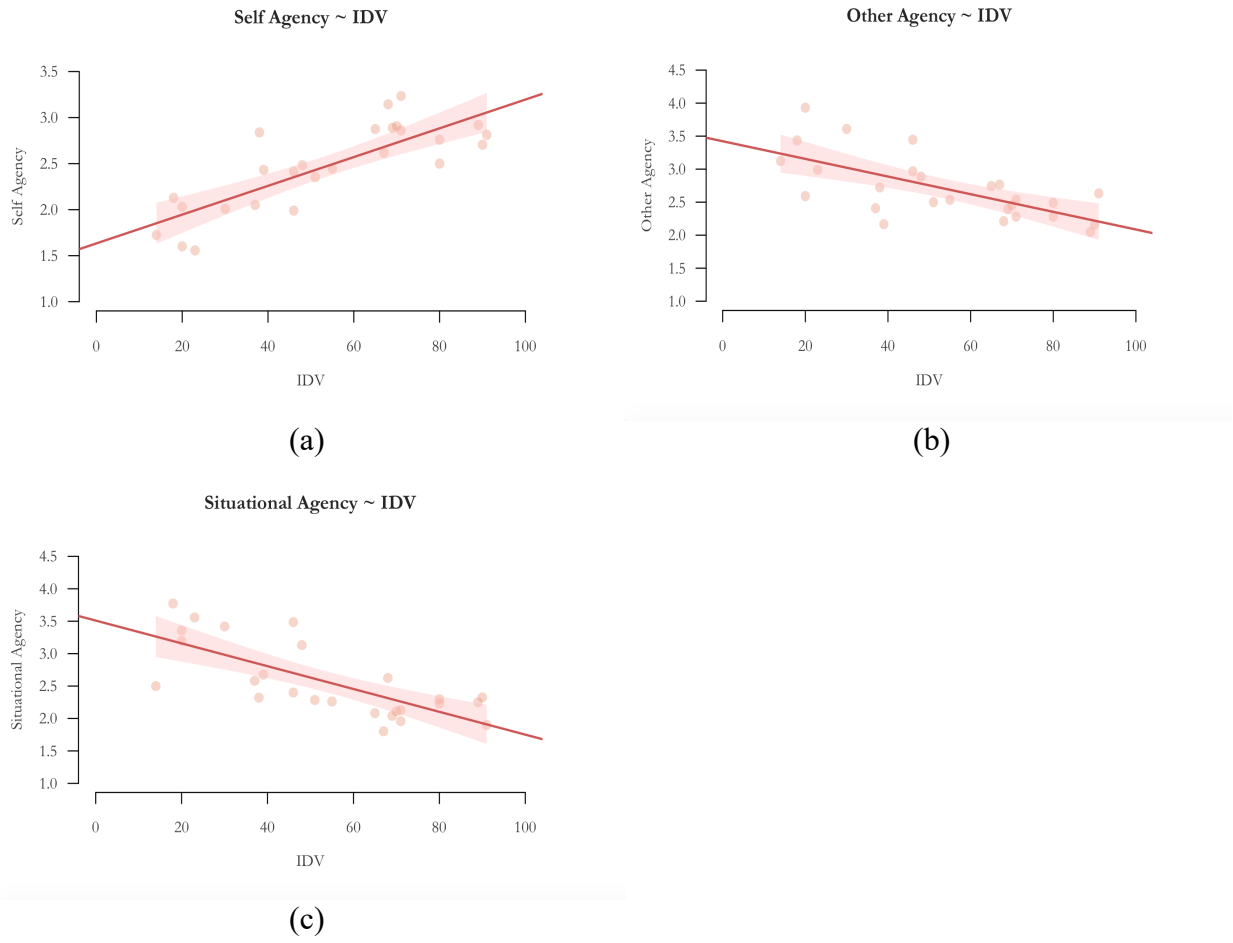
**Figure 1**

*An Emoticon of Awe*

*Note.* This emoticon illustrates the facial expression associated with awe, characterized by raised inner eyebrows, widened eyes, and an open, slightly drop-jawed mouth (Shiota et al., 2003).

**Figure 2**

*Country-Level Average Agency Ratings by Individualism Index Scores*



*Note.* These three graphs respectively represent the country-level average ratings by Individualism Index scores for (a) self-agency, (b) other-agency, and (c) situational-agency. The solid lines indicate the lines of best fit. The shaded areas represent the 95% confidence intervals.

## Appendix A

Coding Scheme for Awe Narratives: Appraisal Dimensions
*Instructions for Coders*

### Step 1: Awe or Not Awe

Please identify whether the narrative is about an experience of awe or not:

- Definition of awe: an emotional response to perceptually vast stimuli that defy and transcend current frames of reference (Keltner & Haidt, 2003).
- If the narrative describes an experience of awe, please code Yes (1) on the first column. If not, please code No (0) on the first column, and specify the reason on the second column.
  1 = Yes
  0 = No
- If the participant self-reports having no previous awe experience, such that they do not remember an awe response or explicitly report never having one, please code Self-report no awe experience (1) on the second column. However, if the participant continues to describe an experience after self-reporting no awe experience, the narrative should be coded as Awe (1) on the first column. If the participant does not explicitly report no awe experience, but writes something that is completely unrelated, such as repeating certain words, typing random letters, or commenting on their survey experience, please code Gibberish (0) on the second column.
  1 = Self-report no awe experience
  0 = Gibberish

### Step 2: Agency

Please rate the participant's levels of self-, other-, and situational-agencies in their experience of awe, as indicated by the narrative.

- The table below includes definitions of self-, other-, and situational-agencies and the citations of relevant literature. These three items are *not mutually exclusive*—that is, the level of each agency is independent from one another. Please indicate the extent to which each agency applies to the narrative on a scale from 1 to 5, 5 being the highest. If the level of a particular agency is not apparent, please code Not apparent (0).
  1 = Not at all
  2 = Slightly
  3 = Moderately
  4 = Very
  5 = Extremely
  0 = Not apparent

| Appraisal Dimension | Definition | Citations |
|---|---|---|
| Self-Agency | *To what extent do you think the narrator feels responsible for having brought about what that makes them feel awe in this situation and feels that they have the ability to influence what is happening in this situation?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Frijda et al., 1989; Manstead et al., 1989; Mauro et al., 1992; Osgood, 1966; Reisenzein & Hofmann, 1990; Roseman, 1979, 1984; Roseman et al., 1990; Scherer, 1982a, 2009; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |
| Other-Agency | *To what extent do you think the narrator thinks other individual(s) is/are responsible for bringing about the event occurring in this situation or feels that other individual(s) is/are controlling what is happening in this situation?* | Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Frijda et al., 1989; Manstead et al., 1989; Mauro et al., 1992; Reisenzein & Hofmann, 1990; Roseman, 1984; Roseman et al., 1990; Scherer, 2009; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |
| Situational-Agency | *To what extent do you think the narrator feels that circumstances beyond anyone's control are responsible for having brought about the event occurring in this situation or feels that circumstances beyond anyone's control determine what is happening in this situation?* | Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Frijda et al., 1989; Manstead et al., 1989; Reisenzein & Hofmann, 1990; Roseman, 1984; Roseman et al., 1990; Scherer, 2009; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |

Please code the primary agency indicated by the narrative.

- This primary agency category is *mutually exclusive*—that is, although a particular narrative may indicate multiple agencies, we ask you to choose the *primary* agency out of self-, other, and situational-agencies. Please code the narrative for the agency that seems most psychologically important to the participant as reported in the narrative. If the participant primarily attributes their awe experience to themselves, please code Self-agency (1); to other people, please code Other-agency (2); to the situation, please code Situational-agency (3). When you are able to identify the agencies but cannot identify the primary agency, please code Other (4). When you cannot identify any agency from the narrative because the narrative is too vague or does not make sense, please code Not applicable (0).

  1 = Self-agency
  2 = Other-agency
  3 = Situational-agency

4 = Other
0 = Not applicable

**Step 3: Other Appraisal Dimensions**

Please identify the participant's appraisal of their experiences of awe, as indicated by the narrative.

- The table below includes a brief description of each appraisal dimension that we think is relevant to the present study and the citations of relevant literature. These appraisal dimensions are *not mutually exclusive*—that is, the level of each dimension is independent from one another. Please indicate the extent to which each appraisal dimension applies to the narrative on a scale from 1 to 5, 5 being the highest. If the level of a particular appraisal dimension is not apparent, please code Not apparent (0).

  1 = Not at all
  2 = Slightly
  3 = Moderately
  4 = Very
  5 = Extremely
  0 = Not apparent

| Appraisal Dimension | Definition | Citations |
|---|---|---|
| Anticipated Effort | *How much effort (mental or physical) do you think the narrator feels the need to expend in this situation? In other words, to what extent do you feel that they need to exert themselves (mentally or physically) to deal with this situation?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a, 1988b; Frijda et al., 1989; Mauro et al., 1992; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |
| Arousal | *To what extent do you think the narrator feels stimulated?* | Cowen & Keltner, 2017; Mehrabian & Russell, 1974; Osgood, 1966; Posner et al., 2005 |
| Attentional Activity | *To what extent do you think the narrator tries to consider further what is happening in this situation, instead of trying to put them out of their mind? In other words, to what extent do you think the narrator tries to devote their attention to what is going on in this situation, instead of trying to think about something else?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a, 1988b; Mauro et al., 1992; Reisenzein & Hofmann, 1990; Scherer, 1982a; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |

| | | |
|---|---|---|
| Certainty | *To what extent do you think the narrator feels sure about what is happening in this situation/understands what is happening around them in this situation/can predict what is going to happen in this situation/feels certain about what is going to happen in this situation/feels certain about where they stand in this situation?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Mauro et al., 1992; Roseman, 1979, 1984; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |
| Commitment | *To what extent do you think the narrator feels a sense of commitment to an individual or creature?* | Cowen & Keltner, 2017; Frijda et al., 1989; Reisenzein & Hofmann, 1990 |
| Compatibility with External Standards | *To what extent do you think the narrator thinks the event or their behavior corresponds to social norms, values, beliefs about justice, or moral principles?* | Manstead et al., 1989; Mauro et al., 1992; Roseman et al., 1990; Scherer, 1984a, 2009; Smith & Ellsworth, 1985 |
| Compatibility with Internal Standards | *To what extent do you think the narrator thinks the event or their behavior corresponds to their self-concept or values?* | Manstead et al., 1989; Mauro et al., 1992; Roseman et al., 1990; Scherer, 1982a, 1984a, 2009; Smith & Ellsworth, 1985 |
| Discrepancy from Expectation | *To what extent do you think the narrator thinks the situation is different from what they expect it to be?* | Cowen & Keltner, 2017; Frijda, 1987; Mauro et al., 1992; Scherer, 1982a, 2009 |
| Dominance | *To what extent do you think the narrator feels dominant?* | Cowen & Keltner, 2017; Mehrabian & Russell, 1974; Osgood, 1966; Scherer, 2009 |
| Expectedness | *To what extent do you think the narrator thinks that this situation has already lasted for some time instead of just having developed all of a sudden/thinks that this situation is expected/has expectations that come true in this situation?* | Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Frijda et al., 1989; Manstead et al., 1989; Reisenzein & Hofmann, 1990; Roseman et al., 1990; Scherer, 2009 |
| Familiarity | *To what extent do you think the narrator has experienced this* | Frijda et al., 1989; Mauro et al., 1992; Reisenzein & |

| | | |
|---|---|---|
| | *situation before/is familiar with this situation/considers this situation as known instead of novel?* | Hofmann, 1990; Roseman et al., 1990; Scherer, 2009 |
| Goal-Conduciveness | *To what extent do you think the narrator considers this situation as conducive, instead of obstructive, to reaching their goals?* | Manstead et al., 1989; Mauro et al., 1992; Reisenzein & Hofmann, 1990; Roseman et al., 1990; Scherer, 1982a, 2009; Smith & Ellsworth, 1985 |
| Goal-Path Obstacle | *To what extent do you think the narrator feels that there are things that need to be done before they can get what they want/there are obstacles standing in the path between them and getting what they want?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a, 1988b; Mauro et al., 1992; Scherer, 1982a, 2009; Smith & Ellsworth, 1985, 1987 |
| Helplessness | *To what extent do you think the narrator feels helpless in this situation?* | Frijda, 1987; Frijda et al., 1989 |
| Identity | *To what extent do you think the narrator identifies with a group of people?* | Cowen & Keltner, 2017; Reisenzein & Hofmann, 1990; Smith & Mackie, 2008 |
| Importance | *To what extent do you think the narrator considers what is happening in this situation as important/thinks that this situation affects them personally?* | Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Frijda et al., 1989; Manstead et al., 1989; Mauro et al., 1992; Reisenzein & Hofmann, 1990; Smith & Ellsworth, 1987 |
| Interestingness | *To what extent do you think the narrator considers this situation as interesting?* | Frijda, 1987; Frijda et al., 1989 |
| Legitimacy | *To what extent do you think the narrator feels what that happens in this situation is fair, instead of feeling cheated or wronged in this situation?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a; Frijda et al., 1989; Mauro et al., 1992; Reisenzein & Hofmann, 1990; Roseman, 1979, 1984, 1991; Smith & Ellsworth, 1985, 1987 |
| Modifiability | *To what extent do you think the narrator considers this situation's* | Frijda, 1987; Frijda et al., 1989 |

| | | |
|---|---|---|
| | *outcome immutable, instead of thinking that someone or something can still change it in some way?* | |
| Pleasantness | *To what extent do you think the narrator feels pleasant in this situation/enjoys the situation?* | Cowen & Keltner, 2017; Ellsworth & Smith, 1988a, 1988b; Frijda, 1987; Frijda et al., 1989; Manstead et al., 1989; Mauro et al., 1992; Mehrabian & Russell, 1974; Osgood, 1966; Posner et al., 2005; Reisenzein & Hofmann, 1990; Roseman, 1979, 1984; Roseman et al., 1990; Scherer, 1982a, 2009; Smith & Ellsworth, 1985, 1987; Tesser, 1990 |
| Powerfulness | *To what extent do you think the narrator feels powerful in this situation?* | Roseman et al., 1990; Scherer, 2009 |
| Safety | *To what extent do you think the narrator feels a sense of safety?* | Cowen & Keltner, 2017; Smith & Lazarus, 1990 |
| Self-esteem | *To what extent do you think the narrator feels that this situation increases their self-esteem?* | Frijda, 1987; Frijda et al., 1989 |
| Someone Else | *To what extent do you think the narrator thinks the situation affects someone else's well-being?* | Frijda et al., 1989; Manstead et al., 1989; Reisenzein & Hofmann, 1990 |
| Urgency | *To what extent do you think the narrator thinks they need to react urgently?* | Frijda, 1987; Frijda et al., 1989; Reisenzein & Hofmann, 1990; Roseman et al., 1990; Scherer, 2009 |

## Appendix B

Prototypical Narrative Examples

| Primary Agency | Example Narratives | |
|---|---|---|
| Self-Agency | Narrative 60, United States | *I was golfing with friends, I was the first to tee off. It was a par 3 hole. I hit my ball and it went straight at the pin. it landed inches from the green and rolled in the hole for my first ever hole-in-one.* |
| | Narrative 2009, South Africa | *I was born into a loving and poor family. We are 5 children 3 boys two girls. My parents could not afford higher education for any of us and we were forced to go out and work at a very early stage in our lives for a living, with minimal practical or theoretical experiences. Getting to the point of this face. At a much later stage in my life in my forties I've overcome the fear of people. I was a loner and could not manage to be in the company of any said number of people. Suddenly I found that I can achieve more, learn new things, such as the IT world of computers and all that goes with. I've taken myself to university, college where taught myself a great deal in this profession. Every time I've learned and achieved something new, I get this face.* |
| Other-Agency | Narrative 961, China | *This year, I saw a news on the internet. In the news, a man donated all his fortune, which is a huge amount of money. He did not give his fortune to his children. His action made me want to do something good.* |
| | Narrative 1473, Argentina | *When I heard a boy sing Ave Maria perfectly. It was about three years ago. I was at the church in my cousin's baptism. I heard with awe how every note was sung with feeling, as if an angel was doing it. Later, I stayed still and was deeply moved by it.* |
| Situational-Agency | Narrative 2137, Japan | *When I worshiped the first sunrise from the summit of Mt. Fuji covered with snow, I was petrified from its spiritual awe.* |
| | Narrative 1729, Chile | *Two earthquakes in two days, in my city, in an inexplicable way.* |

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