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Awe as a Pathway to Mental and Physical Health

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Abstract

How do experiences in nature or in spiritual contemplation or in being moved by music or with psychedelics promote mental and physical health? Our proposal in this article is awe. To make this argument, we first review recent advances in the scientific study of awe, an emotion often considered ineffable and beyond measurement. Awe engages five processes—shifts in neurophysiology, a diminished focus on the self, increased prosocial relationality, greater social integration, and a heightened sense of meaning—that benefit well-being. We then apply this model to illuminate how experiences of awe that arise in nature, spirituality, music, collective movement, and psychedelics strengthen the mind and body.

Keywords

awe, health, well-being, nature, spirituality, music, dance, psychedelics

> 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; I see all; the currents of the Universal Being circulate through me; I am part or parcel of God. The name of the nearest friend sounds then foreign and accidental; to be brothers, to be acquaintances, master or servant, is then a trifle and a disturbance. I am the lover of uncontained and immortal beauty.
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> —Emerson (1836/2009, pp. 3-4)

How is it that experiences in nature, for example in a garden or local park, surfing, camping, or backpacking, improve mental and physical health (Hartig et al., 2014; Kuo, 2015)? Why is spiritual or religious engagement associated with the reduced likelihood of depression and lengthened life expectancy (George et al., 2000; McCullough & Larson, 1999)? How might music or dancing at a festival be good for the body and mind (Bräuninger & Bacigalupe, 2017; Golden et al., 2021)? How might psychedelics serve as a treatment for trauma and anxiety (Chi & Gold, 2020)?

Our answer in this review is awe. Robust literatures suggest that experiences of global positive affect (e.g., "I feel good about life") benefit health and well-being (Lyubomirsky et al., 2005; Pressman et al., 2019). Buoyed by such findings, subsequent studies have turned to examine how experiences of distinct positive emotions, such as amusement or gratitude, benefit health and well-being (Moskowitz et al., 2021; Stellar et al., 2015). These literatures have largely been silent with respect to awe (Stellar et al., 2017).

The purpose of this review is to make the case for how awe "repairs"—in the words of Ralph Waldo Emerson (1836/2009). We do so by synthesizing extant literatures. A first is the emergent science of awe, which has mapped its characteristics as a distinct emotion in its patterning of cognition, behavior, and physiology. These discoveries bring into focus how a complex state such as awe, often considered ineffable and even beyond measurement, leads to shifts in health and well-being. Our second focus is to extend this reasoning to five domains that reliably bring people awe: nature, spiritual engagement, music, dance, and psychedelics (for evidence on these domains as sources of awe, see

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Bai et al., 2017; Keltner, 2023). In each of these domains, we develop how awe specifically improves mental and physical health and highlight prospects for future research.

Awe as a Distinct Emotion

Emotions are brief states that involve distinct experiences, expressive behaviors, patterns of thought, and physiological patterning (e.g., Ekman, 1992; Lench et al., 2011; Scherer, 2005). The preponderance of research in the first few decades of emotion science focused on only six emotions, which included just one positive state, joy (Keltner & Oatley, 2022). This has changed. Once ignored, distinct positive emotions, including states such as amusement, compassion, desire, love, and pride, have become a vibrant empirical focus (e.g., Fredrickson, 2013; Keltner & Cowen, 2021; Shiota et al., 2017). In this expanding study of positive states, considerable scientific progress has been made in mapping the distinct characteristics of awe (e.g., Cowen & Keltner, 2021).

Awe arises in encounters with stimuli that are vast, or beyond one's current perceptual frame of reference (Keltner & Haidt, 2003). Vastness can be physical, perceptual, or semantic and requires that extant knowledge structures be accommodated to make sense of what is being perceived. Recent daily diary work and more open-ended narrative work in more than 25 cultures found that people experience awe through encounters with other people's courage and kindness, nature, collective gatherings (dance, rituals, and ceremonies), music, visual art, religious and spiritual practice, epiphanies, and birth and death (Bai et al., 2017, 2022; Keltner, 2023).

Is awe a distinct state? Is awe, for example, distinct from fear or horror? Or feelings of joy or beauty? And by implication, might awe promote health and well-being in unique ways? Recent evidence suggests that awe is a distinct state in a complex space of eight to 10 positive emotions (e.g., Cowen & Keltner, 2021). The subjective experience of awe captured in self-report measures has been found to be distinct from emotions such as fear, terror, beauty, joy, and interest in large-scale computational studies of emotional responses to short evocative videos (Cowen & Keltner, 2017), music (Cowen et al., 2020), and visual art (Stamkou et al., 2022). In laboratory studies of awe and daily diary assessments of its naturalistic occurrence, about three quarters of awe experiences are predominantly positive, and about one quarter are imbued with threat and felt to be more negative (Chaudhury et al., 2021; Gordon et al., 2017). The degree to which threat imbues awe is more prominent in some cultures, such as Japan, than other cultures (Nakayama et al., 2020). This suggests that the benefits of awe that we focus on in this review are moderated by culture. More generally, given preliminary evidence finding that threat-based awe is not associated with improvements in well-being (e.g., Gordon et al., 2017), the analysis we offer below would not seem to be characteristic of threat-based awe, which in certain contexts might actually reduce well-being and be harmful to health.

Awe is expressed in a pattern of facial muscle movements, including raised inner eyebrows, widened eyes, and an open and slightly drop-jawed mouth (Campos et al., 2013; Cordaro et al., 2018; Shiota et al., 2003), and vocalizations such as "wow" or "whoa" (Cordaro et al., 2016; Simon-Thomas et al., 2009). Recent computational approaches found that the facial, bodily, and vocal expressions of awe are distinct among 25 or so expressions of distinct emotions (Cowen et al., 2019; Cowen & Keltner, 2020; Monroy et al., 2022), are recognized across 10 cultures (Cordaro et al., 2016), and are found to occur in similar contexts—for example when watching fireworks—in 144 cultures in a machine-learning analysis of expressions in more than 2,000,000 videos (Cowen et al., 2021).

Select studies show that awe is marked by a distinct neurophysiological profile. Awe is associated with increased goosetingles as opposed to shuddering, which is more tightly linked with fear and dread (Maruskin et al., 2012); increased vagal tone, except in the case of threat-based awe (Gordon et al., 2017); and reduced activation of the sympathetic nervous system (Chirico et al., 2017; but see Shiota et al., 2011). The awe felt for morally courageous and kind acts is associated with increased oxytocin release (Thomson & Siegel, 2017). Of many positive emotions, self-reports of awe most robustly predicted lower inflammation, as indexed by the biomarker interleukin-6 (Stellar et al., 2015). Recent neuroscientific studies have found experiences of awe to be associated with reduced activation in the default-mode network (DMN), an area of the brain typically associated with self-reflective processes (Horikawa et al., 2020; van Elk et al., 2019). Awe, then, is associated with a profile of elevated vagal tone, reduced sympathetic arousal, increased oxytocin release, and reduced inflammation—all processes known to benefit mental and physical health.

Pathways Through Which Awe Enhances Mental and Physical Health

Thus far, we have made the case that awe is distinct from fear, beauty, interest, and joy. Within a discrete-emotion approach, each emotion is likely to enhance mental and physical health through emotion-specific

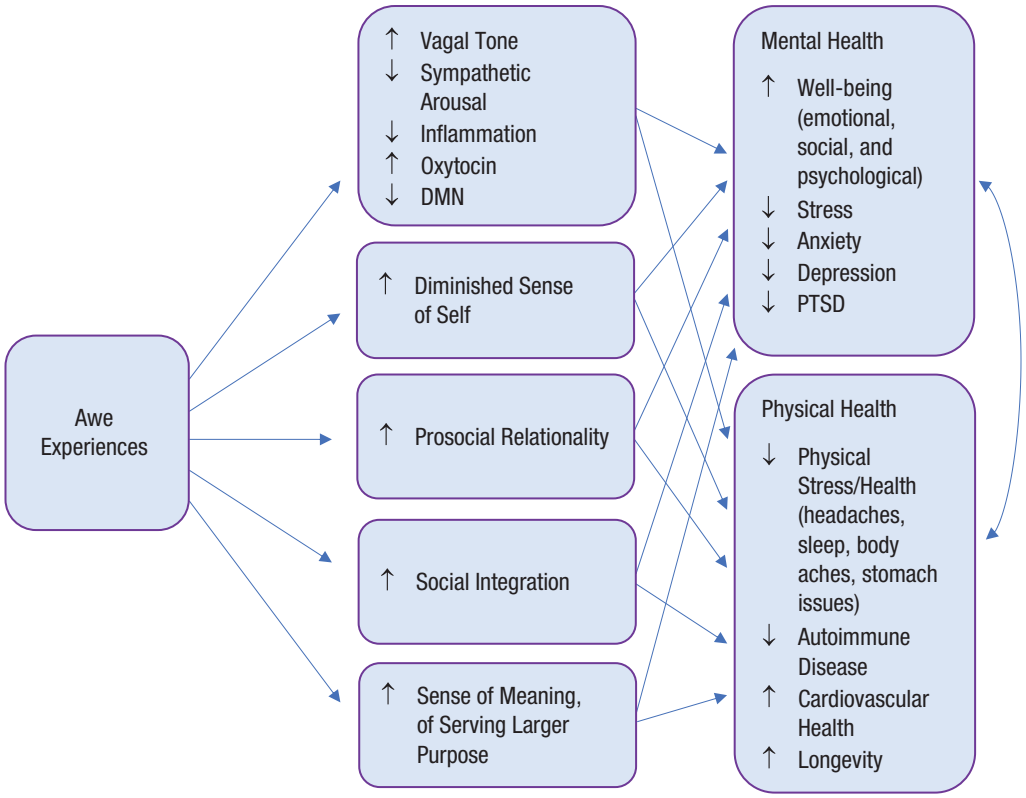

Fig. 1. Model for awe as a pathway to mental and physical health. This model shows that awe experiences will lead to the mediators that will lead to better mental and physical-health outcomes. Note that the relationships between awe experiences and mediators, and mediators and outcomes have been empirically identified; the entire pathways have only recently begun to be tested. One-headed arrows suggest directional relationships, and two-headed arrows suggest bidirectionality. DMN = default-mode network; PTSD = posttraumatic stress disorder.

influences on thought patterns, social behavior, and physiology (e.g., for rationales, see Keltner & Lerner, 2010; Keltner & Shiota, 2021). Advances in understanding awe-related processes (e.g., Chirico & Gaggioli, 2021; Yaden et al., 2019) point to five ways that brief experiences of this emotion will benefit mental and physical health, which we summarize in Figure 1.

A first pathway is through shifts in neurophysiology. The physiological profile of awe documented thus far—elevated vagal tone, reduced sympathetic activation, increased oxytocin, and reduced inflammation—is associated with enhanced mental health. This is evident in studies of increased optimism, sense of connection, and well-being (e.g., Kok et al., 2013; Oveis et al., 2009); an openness to others and prosocial tendencies (Bartz, 2016; Keltner et al., 2014; Kogan et al., 2014); reduced anxiety, depression, social rejection (e.g., Dowlati et al., 2010; John-Henderson et al., 2015; Slavich et al., 2010); and cardiovascular problems and autoimmune disease (Kiecolt-Glaser et al., 2002). Through awe-related shifts in inflammation, for example, or vagal tone, or reduced DMN activation, experiences of awe will likely benefit mental and physical health.

Awe transforms the sense of self—a second pathway through which experiences of awe benefit mental and physical health. An amplified focus on the self has been found to be associated with a variety of mental-health struggles—including depression, anxiety, body-image problems, self-harm, drug abuse, eating disorders—and social problems, such as aggression, racism, bullying, and everyday incivility (e.g., Mor & Winquist, 2002; Twenge & Campbell, 2003). Awe, by contrast, reduces the focus on the self. Across diverse methodologies—lab studies, daily diaries, online narratives, in vivo nature studies—and elicitors of awe, such as images of nature or visual art, awe diminishes self-focus (e.g., Bai et al., 2017; Piff et al., 2015; Stellar et al., 2018; Sturm et al., 2020). For example, in a study conducted at Yosemite National Park, participants were asked to draw a picture of themselves after visiting the tunnel viewpoint, a section of the park that provides a wide scenic view of the entire valley—undoubtedly, an awe-inducing experience

(Bai et al., 2017). The researchers found that people tended to draw themselves in a much smaller relative physical size compared with a control condition, another positive experience at Fisherman's Wharf in San Francisco. These findings were corroborated with daily diary findings showing that on days when people reported experiencing awe, they perceived themselves as smaller (Bai et al., 2017). This vanishing of self-focus brought about by awe, a recent set of studies found, mediates the relationship between naturalistic and laboratory experiences of awe and daily stresses (Bai et al., 2021). Brief experiences of awe, then, are likely to bring about a host of mind-body benefits through a transformed self.

A third pathway by which awe may improve mental and physical health is through enhanced prosociality. Empirical studies have found that transient experiences of awe in the lab and in naturalistic contexts leads to cooperation, sacrifice, and sharing. For example, a series of studies found that people higher in dispositional awe—as measured with items such as "I often feel awe" (Shiota et al., 2006)—tend to be more prosocial (Guan et al., 2019; Jiang & Sedikides, 2021) and are more generous in economic games (Piff et al., 2015; but see Naclerio & Van Cappellen, 2022). In lab studies, experimentally induced experiences of awe (via a nature video) have been found to lead people to prefer a more prosocial, equal distribution of resources (Joye & Bolderdijk, 2015; Piff et al., 2015) and to be more willing to volunteer their time to charity compared with another positive emotion (Rudd et al., 2012). Moreover, studies in nature have found behavioral evidence for the awe-prosocial association. In a study examining whether awe would influence altruistic behavior after looking up at a grove of towering eucalyptus trees (awe condition) or looking at a tall building (neutral condition), after the awe induction, participants were more helpful toward the experimenter (i.e., picked up more pens) and reported feeling less entitled compared with the neutral condition (Piff et al., 2015). Relevant empirical evidence has consistently found that such prosocial relationality elevates well-being (e.g., Dunn et al., 2020) and might even boost life expectancy (e.g., Okun et al., 2013).

As illustrated in Figure 1, a fourth way in which awe will bring about elevated mental and physical health is through the sense of being integrated into strong social networks, one of the strongest predictors of mental and physical well-being (e.g., Eisenberger, 2013; Holt-Lunstad et al., 2010; Muscatell et al., 2016). Emotions by their very nature structure patterns of social interactions (e.g., Keltner & Shiota, 2021; van Kleef & Côté, 2022). In studies of awe of different kinds—whether experienced via a written online narrative, via an in-lab induction, or in vivo—awe led people to feel common humanity with others (Van Cappellen & Saroglou, 2012), integrated within stronger social networks (Bai et al., 2017), and overall more connected to the social and natural world (Nelson-Coffey et al., 2019; Shiota et al., 2007; Yaden et al., 2019).

Finally, a fifth pathway by which awe is likely to enhance mental and physical health is through elevating the individual's sense of meaning. Meaning, or sense of purpose, is found in making sense of life events, finding connections between current events and the past, and one's values and social relationships (Park, 2010). A sense of meaning has been associated with reduction of distress and depression, increases in personal growth, and greater mental and physical well-being (for reviews, see Czekierda et al., 2017; Park, 2010). In experiences of awe, the need for accommodation that arises as a result of encountering vast stimuli—core appraisals of awe—leads to a meaning-making process. Experiences of awe can lead people to seek meaning in specific social contexts (Nakayama et al., 2020; Valdesolo & Graham, 2013) and more generally about the trajectory of life (Lin et al., 2020; Zhao et al., 2019). The search for meaning evoked by awe is likely to lead to greater mental and physical health.

Case Studies of the Sublime: How Awe Promotes Mental and Physical Health

Awe often arises in transcendent encounters, in nature for example, or at a concert or in spiritual practice or during a psychedelic experience (Bai et al., 2017). These encounters often leave people feeling enlivened, robust, and strengthened, but in ways that seem beyond words. We suggest that awe-related processes outlined in Figure 1 provide one approach to unpacking this mystery of awe, how it can often repair and enhance physical health and well-being.

Central to our argument is that experiences of awe can benefit physical health and well-being. Recent empirical work lends credence to these claims. Studies have found that experiences of awe, in particular those not involving appraisals of threat, above and beyond other positive emotions and global positive affect reduce stress (Bai et al., 2021) and posttraumatic stress disorder (PTSD) symptoms in veterans and at-risk youths (Anderson et al., 2018). Other studies have found that experiences of awe—in the lab, in naturalistic contexts, and when assessed with daily diary methods—increase the sense of social integration, personal well-being, and sense of having ample time (Anderson et al., 2018; Bai et al., 2021; Gordon et al., 2017; Rudd et al., 2012). Again, we note that threat-based awe—being in the middle of an earthquake or flood, feeling judged by an omnipotent God, or being part of a

protest march that turns violent—are not likely to bring about the benefits of interest here and could yield the mind-and-body profile of chronic stress and trauma instead. With this caveat in mind, we now consider how these findings we have just reviewed set the stage for considering our second aim—to highlight pathways through which awe may repair the mind and body across five realms of transcendent experience.

Nature

In different countries with varying landscapes and ecosystems, nature is one of the most common elicitors of awe (Bai et al., 2017; Keltner & Haidt, 2003; Shiota et al., 2007). Recent reviews found that contact with natural environments promotes more robust health outcomes, including reductions of stress, reduced inflammation, increased parasympathetic activity, and improved immune functioning (Hartig et al., 2014; Kuo, 2015). Experiences of awe have been proposed to be one of the pathways through which immersion in nature benefits mental and physical health (Kuo, 2015). This thesis, in keeping with our own, has been supported by recent scientific studies that found that awe in nature reduces rumination (Lopes et al., 2020), reduces stress, and elevates well-being (Anderson et al., 2018; Bai et al., 2021). For example, in a study involving adolescents from underresourced inner-city schools and combat veterans, awe experienced outdoors during a rafting trip promoted reductions of stress and PTSD symptoms and improvements in well-being (Anderson et al., 2018). In addition, in college students, daily nature experiences improved well-being via feelings of awe (Anderson et al., 2018, Study 2).

A next generation of studies would be well served by testing predictions outlined in Figure 1 to more precisely unpack the benefits of nature immersion (Kuo, 2015). Relevant work could examine, for example, how the small self produced by nature may reduce stress, how the sense of prosociality that nature immersion brings about through awe (e.g., Piff et al., 2015) accounts for how nature immersion boosts well-being, or how the shifts in neurophysiology, for example inflammation or vagal tone, brought about by experiences of awe in nature might explain the effect of nature immersion on mental and physical health.

Mystical Encounters and Spirituality

In meta-analyses and specific empirical studies, a sense of spirituality—the feeling of being in relation to supernatural forces, often perceived as Divine—and religiosity—engagement with a religion's formalized beliefs and practices—have been shown to benefit the mind and body. Spirituality and religiosity have been linked to stronger social connections (Cohen et al., 2010; Sohi et al., 2018), elevated well-being (e.g., Van Cappellen, Toth-Gauthier, et al., 2016), reductions in anxiety and depression (e.g., McCullough & Larson, 1999; Portnoff et al., 2017), and reduced all-cause mortality, including deaths from cancer and cardiovascular disease (George et al., 2000; Ironson et al., 2002). These findings beg the question of how spiritual and religious engagement benefit the mind and body.

The pathways are likely to be many, from social integration to meaning making. One pathway is through awe (Van Cappellen, Toth-Gauthier, et al., 2016). In the writings of William James (1902/1997) and more recently in scientific work (Cohen et al., 2010; Keltner & Haidt, 2003; Preston & Shin, 2017; Van Cappellen & Saroglou, 2012), awe is central to the mystical experience that people often deem "spiritual." This experience is cultivated by religious ritual, ceremony, and practice (e.g., prayer, chanting, or sacred music). In fact, "awe" is a key item in the most widely used measure of mysticism (Hood, 1975). Awe, as William James suggested, is core to the religious experience (Yaden et al., 2020).

Figure 1 highlights how the awe that arises during spiritual and religious engagement might benefit mental and physical health. To the extent that transformative spiritual experiences bring about shifts in a sense of self (Preston & Shin, 2017), for example, one might expect this facet of awe to reduce subjective and physiological stress. Religious ceremony and spiritual practices often involve strong shared experiences of awe, which likely benefit health and well-being (e.g., Sohi et al., 2018; Van Cappellen, Toth-Gauthier, et al., 2016). It is clear that experiences of awe embedded in spiritual and religious practices are likely to encourage prosocial tendencies (Van Cappellen, Saroglou, & Toth-Gauthier, 2016) and a sense of meaning (Wnuk & Marcinkowski, 2014), both of which have been found to enhance mental and physical health. In many ways, spiritual and more formal religious traditions bring together various beliefs and practices that cultivate the shared experience of awe (e.g., Keltner et al., 2022). The concrete influences of awe on sense of self, physiology, or prosocial relationality reveal how spiritual experiences, so often considered ineffable, benefit the mind and body.

Collective Movement: Music, Dance, and Ceremony

Collective synchronous movements, such as collective rituals, religious ceremonies, singing in chants, prayers,

celebrations, and appreciating music and dance, can all induce awe (e.g., Van Cappellen & Rimé, 2013). They do so, intuition suggests, through various means: a shared neurophysiological profile, the diminishing of the self, a sense of being part of a collective. The analysis we offer here is that through awe, collective movement—in ceremony and ritual, in dance, and in shared music—can benefit health and well-being. Given the complexities of this scientific endeavor—such as data collection and the statistics of interdependent data—this possibility has attracted less systematic attention than studies of nature immersion, for example, but the results are promising and point to new areas of inquiry.

For example, awe surfaced in the accounts of Irish celebrants after St. Patrick's Day parades and of pilgrims to the Magh Mela Hindu festival in India (Khan et al., 2016). In this qualitative work, celebrants reliably spoke of being part of something much larger than their self, a spiritual community, and moved to a heightened sense of purpose and enhanced physical robustness. Similar effects on awe have been found in both religious and nonreligious collective gatherings, such as music and arts festivals (Forstmann et al., 2020; Wlodarczyk et al., 2021).

Music is found to be one of the common elicitors of awe (Keltner & Haidt, 2003; Konecni, 2008; Yaden et al., 2019). For instance, when listening to a moving piece of music, people may feel taken aback, feel small and part of the music, and be transported to a different state of mind with different laws of time, space, and causality. Empirical studies have yielded evidence that music has many benefits for physical health (Golden et al., 2021). For example, in premature infants, music therapy has beneficial effects on heart and respiration rate, weight gain, and days of hospitalization (Standley, 2002). In adults, meta-analyses have shown that music has beneficial effects on physical and subjective stress (Pelletier, 2004), pain (Lee, 2016), mental disorders (Gold et al., 2009), and overall well-being (Daykin et al., 2018; Laukka, 2007). Given these broad benefits of listening to music (and presumably performing), our focus on awe-related processes points to concrete hypotheses to begin to understand how music repairs the mind and body.

In dance, whether alone or in a group, people express and feel awe (Hejmadi et al., 2000; Van Dyck et al., 2013). People also tend to report feeling that their self merges with others—a sense of interconnectedness (Tarr et al., 2015). For example, in a study from Brazil, high schoolers engaged in dance-like movements of the arms and head either in synch with others to the beat of a metronome or out of synch with those nearby and participants who "danced" with exertion with others felt more interconnected with those students (Tarr et al., 2015). They also could tolerate more pain, a sign of elevated opioids that accompanies feelings of merging with others (Tarr et al., 2015). Moreover, in the study of dance, evidence suggests overall improvements in physical and psychological health. For example, studies of dance-movement therapy have found reductions in anxiety, stress, and depressive symptoms and improvement in overall quality of life (for review, see Bräuninger & Bacigalupe, 2017; Millman et al., 2021). This evidence suggests that dance enhances mental and physical health. As illustrated in Figure 1, we suggest that awe is one account of dance's many likely benefits.

Psychedelics

"Psychedelics" refers to a wide array of compounds, both natural and synthesized, that alter serotonin levels in the brain (Presti, 2017). Examples include psilocybin, LSD, MDMA, DMT (ayahuasca), and mescaline (peyote). In the study of psychedelics, psilocybin and MDMA are the most widely studied compounds.

Across different studies, 50% to 70% of participants reported that psychedelics produced one of the most significant spiritual experiences of their lives and often centered on intense experiences of awe (Griffiths et al., 2006, 2008). Recent studies have also found that psychedelics have beneficial effects on anxiety, depression, substance abuse disorders (e.g., smoking, alcoholism), obsessive-compulsive disorder, and PTSD (see reviews by Chi & Gold, 2020; Johnson et al., 2019) as well as improvements in well-being (Griffiths et al., 2008).

A central hypothesis to emerge in the literature on psychedelics is that their benefits derive from the experiences of intense awe they occasion (Hendricks, 2018; van Elk et al., 2022). In keeping with this thinking, a study found that psychedelics, like awe, consistently deactivate the DMN, the neurophysiological equivalent of "ego dissolution" (Carhart-Harris et al., 2012). Psychedelics reduce activation in threat-related regions of the brain—the amygdala—allowing people to ruminate less on trauma, obsessive ideas, addictions, or even the imminence of dying (Vollenweider & Preller, 2020). Psychedelics lead people to feel greater connectedness to others and the world in general (Carhart-Harris et al., 2018; Watts et al., 2017), feel fewer distinctions with others (Vollenweider & Preller, 2020), and be more altruistic (Griffiths et al., 2006)—awe-like shifts in the sense of self, relationality, and prosociality. Most directly, psychedelics can reduce depression, anxiety, and addiction through experiences of awe (Hendricks, 2018).

The literature on psychedelics and that on nature have most explicitly considered awe as a mediating process between transcendent domain and health and

well-being benefits. Again, we note the opportunity for more precise theorizing, but threat-based awe in these contexts may account for why psychedelics or nature immersion might not yield health and well-being benefits. The reasoning we advance in Figure 1 highlights a host of more specific hypotheses worthy of scientific study.

Implications and Future Scientific Inquiry

Recent advances in the science of awe reveal it to be a distinct positive emotion that engages five processes that can be beneficial for mental and physical health, when threat appraisals are not salient in the unfolding experience of awe. These processes include shifts in neurophysiology, a diminished focus on the self, increased prosocial relationality, greater social integration, and a heightened sense of meaning. The effects of awe on these five pathways are substantial, ranging from .20 to .48 in size (e.g., Bai et al., 2017; Nelson-Coffey et al., 2019; Piff et al., 2015; Stellar et al., 2015; Zhao et al., 2019). This suggests that experiences of awe—whether experienced in controlled lab settings or in more ecologically valid settings, such as out in nature—have meaningful consequences on neurophysiology, the self, prosociality, social integration, and meaning. All five of these processes benefit the mind and body, suggesting that awe is a pathway to mental and physical health.

As we noted in different places in this review, the awe-health pathway we propose here may be specific to positive awe experiences. Threat-based awe is experienced as more negative (Gordon et al., 2017; Nakayama et al., 2020) and may produce diverging effects on mental and physical health. For example, studies examining threat-based awe have found diverging neural activity (Takano & Nomura, 2022), lower effects on prosociality (Guan et al., 2019; Study 3), and minimal to negative effects on well-being compared with positive awe experiences (Gordon et al., 2017). It will be critical for future work examining the predictions outlined in Figure 1 to disentangle positive and threat-based awe experiences, as well as likely amplifiers of threat in awe experiences: such as culture; individual differences, such as neuroticism; and contextual factors, such as the salience of vertical hierarchies.

In this review, we have made the case for how domains that have been the provenance of awe experiences for thousands of years—nature, spirituality, music, dance, and psychedelics—bring about mind-body benefits through awe-related processes. In each of these realms, it is clear that awe is prominent, and the evidence for its benefits is promising and preliminary. The discoveries of how awe shifts physiology, the sense of self, orientations to others, and the search for meaning point to precise process-like studies for understanding how sublime realms, from nature to music, can benefit the mind and body.

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