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RESEARCH ARTICLE

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The effects of awe-eliciting experiences on consumers' aversion to choice ambiguity

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Abstract

Experiencing awe elicits feelings of both being part of something that is bigger than oneself (self-transcendence) and a sense, or feeling, of smallness. Our studies show that these distinct responses serve as mechanisms of action that have both main and mediating effects on consumer preference in ambiguous choice contexts. Across five studies, this research shows that self-transcendence *decreases* ambiguity aversion while a sense of smallness *increases* ambiguity aversion. In other words, the experience of awe can both increase and decrease consumers' aversion to ambiguity and this, in turn, can impact choice preferences. Awe-inspiring brands with unique innovative designs, unexpected features, or exceptional quality need to be cognizant of the potential influence awe could have on consumers' purchase decisions.

KEYWORDS
ambiguity, choice, decision making

> *He who can no longer pause to wonder and stand rapt in awe, is as good as dead; his eyes are closed.*
>
> Albert Einstein

1 | INTRODUCTION

The pivotal role that emotions play in consumers' judgment and choice processes is well-documented (George & Dane, 2016). Better understanding the factors that influence the elicitation of discrete emotional states, and, in turn, how those states affect consumer motivation has, not surprisingly, been a popular research objective. Emotions associated with the experience of awe have especially piqued the interests of marketing researchers. The experience of awe has been defined in a variety of ways by different psychologists and scholars yet one of the primary emotions it elicits is awe, an essential emotion generally understood to be a feeling of wonder, amazement, or reverence in the presence of something vast or mysterious (Chirico et al., 2017).

Awe is often associated with experiences of natural beauty such as watching an evening moonrise or seeing a starry night sky. Experiencing art and music that is overwhelmingly beautiful or emotionally powerful can also elicit awe (Septianto et al., 2023). Research has also found that spiritual experiences can be associated with feelings of awe and those feelings can deepen one's sense of connection to a higher power (Van Cappellen & Saroglou, 2012). Feats of human achievement, such as witnessing a great athletic performance, can elicit awe as well (Piff et al., 2015). It is a powerful emotion experienced when something is encountered that is so perceptually vast that it alters one's understanding of the world (Keltner & Haidt, 2003). It is an emotion of wonder, distinct from other positive and negative emotional states, that can have a significant influence on consumers' evaluative and choice processes.

A large body of research has demonstrated that incidental emotions have a significant influence on behaviors (Lerner et al., 2004;

Rudd et al., 2012). Yet prior decision research has tended to focus on experiences associated with high-arousal negative emotions like fear, anger, and disgust. Experiences that elicit positive emotions also have complex downstream effects on choice and judgment processes, but they have received much less attention. This may help to explain why marketers have a relatively limited understanding of how the experience of awe can influence consumption behaviors. The paucity of research in the marketing literature that focuses on the effects of awe, despite the increased ease with which "awesome" consumer experiences can be created using virtual and augmented reality (AR), provides an opportunity to address many unanswered questions.

This research contributes to the marketing literature by providing insight into the potential mechanisms of action associated with the experience of awe, namely a feeling of self-transcendence and a sense of smallness. More specifically, we examine the potential effects of the experience of awe on consumers' product evaluations, purchase intentions, and choices in ambiguous choice contexts. Experiencing awe can make consumers more open to new experiences and information, which can lead to more informed and beneficial purchasing decisions. That is, awe may have a positive effect on consumers' tolerance for ambiguity, a characteristic of many choice contexts. As a result, the study of the experience of awe and its effect on consumer behavior is important for both businesses and consumers. Businesses can use this knowledge to create marketing campaigns that evoke awe in consumers, while consumers can use this knowledge to make more informed and beneficial purchasing decisions. In choice scenarios that include ambiguous aspects, marketers may be able to use awe-eliciting experiences to their benefit, for example, by increase consumers' tolerance for ambiguity.

A substantial body of research supports the notion that ambiguity, described as a quality that depends on the amount, type, reliability, and unanimity of information, can play a significant role in many marketing situations (Ellsberg, 1961; Hoch & Ha, 1986; Kahn & Sarin, 1988). For example, studies (Cho & Taylor, 2020; Ha & Hoch, 1989; Septianto et al., 2022) have shown that ambiguous advertisements often generate more interest and curiosity than more direct advertisements, although they can also be more confusing and less persuasive. Other research (Van Rompay & Veltkamp, 2014; Yoo & Sarin, 2018) has explored how ambiguity in product design affects consumers' product perceptions. Ambiguity can also influence how consumers weigh different attributes and make trade-offs between them. Consequently, marketers have been particularly interested in better understanding the ambiguity effect, a cognitive bias that describes how people tend to avoid options with uncertain outcomes when making decisions. In other words, when faced with a choice between options with known and unknown outcomes, consumers tend to favor the known option, even if the unknown option could potentially result in a better outcome. This bias tends to occur when consumers believe that there is not sufficient information available to make a confident decision. However, ambiguity tolerance, which is the ability to accept and cope with ambiguity, uncertainty, and complexity in various situations, differs among individuals. That is, tolerance for ambiguity has generally been conceived as a personality variable or individual difference factor and has been shown to influence a variety of evaluative and choice outcomes (Wang & Shukla, 2013; Yoo & Sarin, 2018). It seems likely to have a particularly significant influence on consumers' affective responses and purchase intentions in ambiguous decision contexts. If true, this presumption has important implications for marketing managers and is therefore also examined in this series of studies.

In the next section, the conceptual model and rationale for the present research are discussed and the hypotheses are presented. Two pilot studies are then presented, followed by the descriptions and results of five experimental studies. The pilot studies are used to identify the appropriate test and control stimuli. Study 1 identifies two mechanisms of action associated with the experience of awe, feelings of self-transcendence and a sense of smallness. Study 2 extends these findings by examining how feelings of self-transcendence and a sense of smallness influence ambiguity aversion in a classic Ellsberg (1961) urn paradox task. Next, study 3 examines the consequences of ambiguity aversion in the context of multi-attribute choice behavior. Study 4 tests whether the pattern of results from studies 1, 2, and 3 are influenced by a consumer's tolerance for ambiguity. Finally, study 5 tests to see whether our key findings, namely the opposing effects of feelings of self-transcendence and a sense of smallness on ambiguity aversion, are replicable in choice situations with real monetary consequences. The conclusions of this research are then provided, and the managerial and theoretical implications of the findings are identified. This article closes with a discussion of the opportunities for further research.

2 | CONCEPTUAL RATIONALE AND HYPOTHESES

The experience of awe has been a topic of discussion among philosophers and psychologists at least since the time of Charles Darwin. In fact, when considering the awe-inspiring collection of 68 species of beetles acquired during the Voyage of the Beagle, Darwin was struck by the thought that "creatures so low in the scale of nature are most exquisite in their forms and rich colours…[i]t creates a feeling of wonder that so much beauty should be apparently created for such little purpose" (Darwin et al., 1989). Darwin's description of awe beautifully reflects the feeling of wonder and amazement at being in the presence of something transcendental. Feelings of awe elicited by an experience, like elevation, appreciation, and admiration (Keltner & Haidt, 2003; Ortony et al., 1988; Stellar et al., 2017) is an epistemological and prosocial emotion (Keltner & Haidt, 2003; Stellar et al., 2017) and as such, involves changes to one's understanding of the external world (Keltner & Shiota, 2003; Shiota et al., 2006, 2007).

Awe is not the only emotion that seems to be associated with the experience of awe. For example, experiencing awe increases helping behaviors and fosters feelings of generosity (Piff et al., 2015; Rudd

et al., 2012). Presumably this occurs because it pulls attention away from the self, leading to feelings of self-transcendence and a sense of being in the presence of something greater than oneself (Piff et al., 2015; Shiota et al., 2007). Self-transcendence involves a sense of interconnectedness and an expansion of the self beyond its normal boundaries. People who experience self-transcendence during an awe-inspiring event may feel that their individual concerns and problems become less significant and that they are connected to something larger than themselves. This feeling of self-transcendence can lead to positive outcomes, such as increased empathy, prosocial behavior, and a greater sense of purpose in life (Castelo et al., 2021; Li et al., 2019).

Kant's conceptualization of "our feeling of the sublime" includes another emotional aspect associated with the experience of awe (Kant, 2011). The sublime is that which goes beyond, or transcends, the current limits of our knowledge and experience and leaves us feeling small and insignificant. The awe-elicited feelings of diminishment that often occur with religious and spiritual experiences seem to be the product of "specific cognitive and behavioral tendencies that enable individuals to fold into collaborative social groups" (Piff et al., 2015). As Piff et al. (2015) note, collaboration requires a diminished focus on oneself and one's own interests. More specifically, Piff et al. (2015) found that people who experienced awe were more likely to donate money to charity and volunteer their time. This is likely to have occurred because the experience of awe led to feelings of self-transcendence, which is a sense of connection with something larger than oneself. When one experiences awe, one is reminded of one's own smallness in the grand scheme of things, and this can lead to a greater sense of compassion and generosity. Another study by Stellar et al. (2017) found that people who experienced awe were more likely to choose sustainable and ethical products. This is likely because awe can lead to a sense of the interconnectedness of all things, and this can make us more aware of the impact of our consumption on the environment and society.

A study by Bai et al. (2017) found that people who experienced awe were more likely to be open to new experiences and information. This is likely because awe can lead to a sense of the vastness of the world around us, and this can make us more willing to question our assumptions and explore new possibilities. This, in turn, places greater importance on the entities that one is a part of such as humanity itself (Sober & Wilson, 1998). Thus, based on prior conceptualizations of the experience of awe, our research focuses on two key mechanisms of action that are associated with its effect—feelings of self-transcendence (wonder) and a sense, or feeling, of smallness. We predict the following:

H1: The experience of awe creates two mechanisms of action, (a) feelings of self-transcendence and (b) a sense of smallness.

The feelings of self-transcendence and a sense of smallness elicited by an experience of awe serve as mechanisms of action. In other words, we suggest that they are the processes by which an awe-eliciting event influences consumers' responses. We further propose that these two responses elicited by the experience of awe have opposing effects on decision makers' evaluative and choice processes. Specifically, a sense of smallness is expected to increase ambiguity aversion, while feelings of transcendence are expected to decrease ambiguity aversion. A sense of smallness, or a diminishment of the self, is associated with feelings of lost certainty and control (Valdesolo & Graham, 2014). These feelings, in turn, may motivate individuals to search for a resolution, that is, for a way to regain a sense of certainty (Keltner & Haidt, 2003; Valdesolo & Graham, 2014). In other words, a there would be an increased preference for unambiguous outcomes. This implies that experiencing awe will influence social judgments such that outcomes that provide a resolution of uncertainty, such as agency detection, are more likely to occur (Keltner & Haidt, 2003; Valdesolo & Graham, 2014). These associations also suggest that decision outcomes that add to feelings of uncertainty (e.g., an ambiguous choice option), as opposed to outcomes that increase feelings of control and certainty (e.g., a nonambiguous choice option), are less likely to be preferred (Keltner & Haidt, 2003).

On the other hand, feelings of self-transcendence are expected to influence consumers such that outcomes that provide a resolution of uncertainty *are not* more likely to be preferred. That is, feelings of self-transcendence, as opposed to a sense of smallness, are not expected to motivate individuals to search for outcomes that reduce feelings of uncertainty. Ambiguity aversion is not likely to occur because, unlike smallness, self-transcendence directs attention away from the self. In fact, self-transcendence, "the ability to reach out creatively beyond physical and mental boundaries in the processes of learning, development, and evolution" (Capra, 1988), should increase tolerance for ambiguous outcomes.

H2: The effects of an awe-eliciting experience on consumers' responses to ambiguous (vs. unambiguous) choice options are mediated by feelings of self-transcendence and a sense of smallness. Specifically, feelings of awe will have a (a) positive indirect effect through feelings of self-transcendence and a (b) negative indirect effect through a sense of smallness on consumers' product preferences, attitudes, and purchase intentions.

Many choice situations that individuals encounter are complex, novel, and insoluble, that is, they are ambiguous. Understanding and predicting behavior under these circumstances can be difficult. However, compared to when only one emotional state or one dispositional trait is considered, considering the individual's current emotional state and his or her enduring dispositional traits seems likely to provide a more accurate prediction of consumption behavior (West & Broniarczyk, 1997). In fact, given that ambiguity and uncertainty are common features of many choice decisions, an inherent preference for, or aversion to, ambiguity seems likely to have significant choice implications (West & Broniarczyk, 1997). Several different definitions of ambiguity tolerance have been

presented in the psychology, management, organizational behavior, and marketing literatures. Generally, individuals with greater ambiguity tolerance are more comfortable in situations with novelty, a lack of familiarity, and higher complexity compared to consumers with less tolerance. This individual difference construct—tolerance for ambiguity—reflects one's tendency to view ambiguous situations as desirable. Similarly, intolerance for ambiguity refers to a tendency to interpret ambiguous situations as sources of threat and discomfort.

Extensive prior research has demonstrated that there is a positive correlation between both affective and cognitive well-being and a tolerance of ambiguity (West & Broniarczyk, 1997). This is not surprising given, as Keltner and Haidt (2003) have explained, that awe can be a destabilizing emotion, often elicited by something which is difficult to understand. We suggest that individuals who are more tolerant of ambiguity are less likely to be destabilized by the experience awe than less tolerant individuals. Consequently, those who have a lower tolerance for ambiguity will have a stronger response compared to those with a higher tolerance for ambiguity. The following is hypothesized:

> **H3:** Ambiguity tolerance will moderate the mediated effects of the experience of awe on purchase intention such that (a) the negative effects of the experience on purchase intention through smallness will be larger (smaller) when ambiguity tolerance is low (high) and (b) the positive effects of the experience on purchase intention through self-transcendence will be larger (smaller) when ambiguity tolerance is low (high).

3 | PILOT STUDIES

As other researchers have noted (Chirico et al., 2017; Shiota et al., 2006), one of the most challenging aspects associated with studying the effects of an awe-eliciting experience is determining the best way to produce it in controlled experimental settings. Prior researchers have used several different approaches (Chirico et al., 2017) and their results suggest that videos are both effective and relatively easy to create and incorporate into an experimental protocol.

3.1 | Pilot study 1

3.1.1 | Method

This initial pilot study evaluated potential treatment and control stimuli. Five different treatment (awe-eliciting) and five different control videos were created by editing videos downloaded from YouTube. For the treatment stimuli, two videos presented segments from the BBC TV series Planet Earth and three videos presented views of space that included photos taken by the Hubble telescope. Potential control videos featured farm animals such as hens and cows foraging or grazing for food.

A sample of 201 adults recruited via Amazon's Mechanical Turk (MTurk) served as participants and were provided monetary compensation (42% female). One potential treatment and one potential control video, each lasting precisely 2 min, were shown to participants; the order and pairings of the treatment and control videos were randomized across participants. After participants watched the first video, three seven-point items that assessed the target affective response were presented. The second video and set of target measures was then presented. Items used to assess feelings of awe (presented after the potential treatment videos) are as follows, anchored with strongly disagree/strongly agree: "While watching the video, I experienced [awe, feelings of wonder, awesome feelings." Higher values indicated stronger feelings of awe (coefficient $\alpha = 0.92$). The following three seven-point items with endpoints strongly disagree/strongly agree assessed responses to the potential control videos: "While watching the video, I [experienced awe (reverse coded), did not experience any specific emotions, did not feel differently.]" Higher values indicate a weaker affective response (coefficient $\alpha = 0.90$).

3.1.2 | Results and discussion

The pretest identified two treatment videos from the set of five potential treatment videos (stimuli); feelings of awe elicited by both videos 1 and 4 ($M_{t1} = 6.05$ vs. $M_{t4} = 6.07$, $p > 0.05$) were significantly higher ($p < 0.05$) than feelings of awe elicited by videos 2, 3, and 5 ($M_{t2} = 4.56$, $M_{t3} = 4.71$, and $M_{t5} = 3.73$). Three control videos were also identified ($M_{c1} = 6.0$ vs. $M_{c3} = 6.07$ vs. $M_{c5} = 5.78$ $p > 0.05$) from the set of five potential control videos; affective responses to these stimuli were significantly weaker ($p < 0.05$) than feelings elicited by videos 2, and 4 ($M_{c2} = 3.56$ and $M_{c4} = 4.56$). This pilot study confirms that videos presented within a Qualtrics survey can effectively present experimental manipulations (i.e., treatment [awe-eliciting] and control video experiences.

3.2 | Pilot study 2

The purpose of the second pilot study was to ensure that the only difference between the feelings elicited by the treatment and control videos was awe. More specifically, after viewing either a treatment or control video, participants indicated the extent to which they experienced the following emotions on a seven-point scale (anchored by *not at all/extremely*): sadness, fear, pride, excitement, and happiness.

3.2.1 | Method

The two different treatment (awe-eliciting) videos and three potential control videos identified in the first pilot study served as stimuli. A national sample of 221 adults (50% women) recruited from Amazon's MTurk served as participants and received monetary compensation. Unlike the first pilot study, each participant viewed only one of the five videos that were identified as either potential treatment or control stimuli. After viewing the randomly presented video,

participants reported their feelings of sadness, fear, pride, excitement, and happiness. An analysis of variance compared these ratings across the videos.

3.2.2 | Results and discussion

Results indicate that there were no significant differences between the emotions elicited by the videos with respect to the following: feelings of sadness ($M_{t1} = 2.35$ vs. $M_{t2} = 2.38$ vs. $M_{c1} = 2.33$ vs. $M_{c2} = 2.3$ vs. $M_{c3} = 2.05$, $F(4, 216) < 1$, $p > 0.10$); fear ($M_{t1} = 2.22$ vs. $M_{t2} = 2.16$ vs. $M_{c1} = 2.17$ vs. $M_{c2} = 2.00$ vs. $M_{c3} = 2.08$, $F(4, 213) < 1$, $p > 0.10$); pride ($M_{t1} = 2.07$ vs. $M_{t2} = 1.94$ vs. $M_{c1} = 1.85$ vs. $M_{c2} = 1.78$ vs. $M_{c3} = 1.90$, $F(4, 216) < 1$, $p > 0.10$), excitement ($M_{t1} = 1.81$ vs. $M_{t2} = 2.14$ vs. $M_{c1} = 2.00$ vs. $M_{c2} = 2.03$ vs. $M_{c3} = 1.85$, $F(4, 216) = 1.33$, $p > 0.10$), and happiness ($M_{t1} = 1.75$ vs. $M_{t2} = 2.02$ vs. $M_{c1} = 2.00$ vs. $M_{c2} = 1.90$ vs. $M_{c3} = 2.10$, $F(4, 216) = 1.40$, $p > 0.10$). The results of this pilot study confirm that the stimuli (i.e., two treatment and three control videos) do not differ in terms of the positivity or negativity of the elicited emotions.

4 | STUDY 1

The primary objective of study 1 was to test whether (a) feelings of self-transcendence and (b) a sense of smallness resulting from being in the presence of something vast were associated with the experience of awe elicited by the treatment video.

4.1 | Method

4.1.1 | Sample, stimuli, and procedure

One hundred twenty-three participants recruited from Amazon's MTurk participated in study 1 for financial compensation (44% female, median age was 38 years). Qualtrics was used to present the awe-eliciting stimuli and dependent measures. After agreeing to participate in the study, participants were informed that the experiment would begin with the presentation of a brief video and, therefore, they should adjust their computer's volume to a comfortable level. The awe-eliciting video featured the vastness and beauty of space and lasted precisely 2 min.

In the first few seconds of this video, participants were advised to "ENJOY THIS AWESOME EXPERIENCE." Note that the message was presented in white letters on a black background. Then the main theme from the movie Interstellar composed of Hans Zimmer began to play and slowly increased in volume as a picture of earth as seen from space appeared. Beautiful images of stars and nebulae appeared, and this created the sensation of flying through the universe. The video concluded with a close-up of the earth from space before transitioning to a black screen while the music continued for 3 s. Immediately following the presentation of the video, items drawn from prior research (Chirico et al., 2017; Piff et al., 2015) assessed consumers' emotional responses. Eight seven-point items with endpoints strongly disagree/strongly agree were stated as follows: "While watching the video, I experienced [feelings of wonder, feeling that I am part of something bigger in this world, feelings of transcendence, feelings of contentment, feelings of joy, feelings of humility, a sense of vastness, feeling small and insignificant.]" Higher values indicate stronger feelings.

5 | RESULTS AND DISCUSSION

The eight scale items were first evaluated using principal-axis factor analysis (with varimax rotation). The items loaded on two factors (eigen values > 1) and all factor loadings exceeded 0.60. Next, a confirmatory factor analysis was performed using Amos 26 to examine the items for the two proposed mechanisms of action. While the χ^2 was significant ($\chi^2(15) = 62.7$, $p < 0.0001$), the fit indices for the measurement model indicate adequate fit: Comparative Fixed Index = 0.91 and the Non-normed Fit Index = 0.90. Consequently, the scale to assess feelings of self-transcendence was composed of the following five items (endpoints strongly disagree/strongly agree): "While watching the video, I experienced [feelings of wonder, feeling that I am part of something bigger in this world, feelings of transcendence, joy, and feelings of contentment]." The coefficient α estimate of internal consistency was 0.87; this indicates that the scale is reliable. The measure of a sense of smallness was also reliable (coefficient $\alpha = 0.80$) and included the following three items (endpoints strongly disagree/strongly agree): "While watching the video, I experienced [feelings of humility, a sense of vastness, feeling small and insignificant]. The results of a confirmatory factor analysis provide initial support to the notion that the experience of awe elicits two distinct emotions, namely feelings of self-transcendence and a sense of smallness, that are associated with its effects. This finding supports H1a and H1b.

6 | STUDY 2

Study 1 demonstrated that the experience of awe is associated with two potential mechanisms of action, feelings of self-transcendence and a sense of smallness. The purpose of study 2 was to extend this research by examining how feelings of self-transcendence and a sense of smallness influence ambiguity aversion in the classic Ellsberg (1961) urn paradox task.

6.1 | Method

6.1.1 | Sample

A national sample of 127 adult participants was obtained from Amazon's MTurk. Participants had a median household income of $40,000–$49,999, 36.4% of participants were female, and the median age was 40. The five-item measure of self-transcendence and the three-item measure of a sense of smallness identified in study 1 were used to assess consumers' affective responses to the treatment (awe-eliciting) and control videos. Higher values indicate stronger feelings.

6.1.2 | Experimental design, stimuli, and procedure

Study 2 was a one-way (experience: awe-eliciting vs. control) between-subjects experiment. Participants were randomly assigned to one of the two experimental conditions; the identical procedure used in study 1 was implemented in study 2. Specifically, Qualtrics survey software was used to present the stimuli and dependent measures. Again, the following statement appeared in the first frames of the treatment video and remained on screen for 3 s: "ENJOY THIS AWESOME EXPERIENCE." The control video also opened with a black screen and then in bold, white letters the following appeared and remained on screen for 3 s: "ENJOY THIS EXPERIENCE." Immediately following the presentation of the videos, consumers' emotional responses (i.e., feelings of self-transcendence and a sense of smallness) were assessed.

6.1.3 | Task and dependent measures

Next, Ellsberg's classic urn paradox problem was presented. The following description of the task was presented to all study participants: "Imagine that there is a jar on the table (Jar A) filled with exactly 50 blue balls and 50 red balls, and a second jar (Jar B) filled with 100 balls with some that are blue and some that are red, but you do not know their relative proportion. Next, suppose that you are offered a ticket to a game that is to be played as follows: First, you are to guess a color (blue or red). Then, without looking, you are told to draw a ball out of one of the jars. If you draw the ball matching the color you predicted, then you will win $100; otherwise, you win nothing."

Participants indicated the most money that they were willing to pay for Ticket A (i.e., a chance to draw from Jar A with 50 red and 50 blue balls) and for Ticket B (i.e., a chance to draw from Jar B with 100 total balls but with an unknown number of blue and red balls.) Note that Ticket A represents the option with unambiguous risks and Ticket B represents the option with ambiguous risks. Participants used a sliding scale with anchor points $0 and $100 to record their responses to these two items. A difference measure was then created by subtracting the price participants were willing to pay for Ticket B (ambiguous risk) from the price they were willing to pay for Ticket A (unambiguous risk). Greater positive differences between these two willingness-to-pay measures indicate higher levels of ambiguity aversion. Below, this calculated dependent variable is referred to as the ambiguity aversion measure.

7 | RESULTS

A one-way (awe experience: treatment vs. control) multivariate analysis of variance was conducted to examine the influence of the awe manipulation on participants' emotional responses. The multivariate results show a significant treatment effect on participants' feelings of self-transcendence and sense of smallness (Wilks' $\lambda = .61$ $F(2, 124) = 40.21$, $p < 0.0001$). Follow up univariate results reveal a significant positive main effect of the awe manipulation on both participants' feelings of self-transcendence ($M_{awe} = 5.42$ vs. $M_{control} = 3.49$, $F(1, 125) = 65.44$, $p < 0.0001$) and sense of smallness ($M_{awe} = 4.99$ vs. $M_{control} = 2.86$, $F(1, 125) = 75.48$, $p < 0.0001$). These findings confirm H1a and H1b.

Model 4 with 10,000 bootstrap samples was used to examine the direct and indirect effects (IEs) of awe (Hayes, 2017). The parallel mediation model shown in Figure 1 was tested. The difference between the amount consumers were willing to pay for the ambiguous versus unambiguous option (ambiguity aversion measure) was regressed on the awe experience (treatment vs. control) factor. Feelings of self-transcendence had a negative effect ($b = -4.58$, $t(123) = -2.40$, $p < 0.05$) and a sense of smallness ($b = 4.73$, $t(123) = 2.80$, $p < 0.01$) had a positive effect on ambiguity aversion. That is, self-transcendence reduced participants' aversion to ambiguity and smallness increased aversion to ambiguity. Recall that a greater (positive) difference between a willingness to pay to play the unambiguous versus ambiguous lottery indicates greater ambiguity aversion. There was not a main effect of the awe manipulation on the ambiguity measure ($b = -4.27$, $t(123) = -1.09$, $p > 0.05$).

An IE of awe through feelings of self-transcendence was expected to have a negative influence on consumers' aversion to ambiguity while an IE of awe through a sense of smallness was expected to have a positive effect on ambiguity aversion. As expected, the results indicate

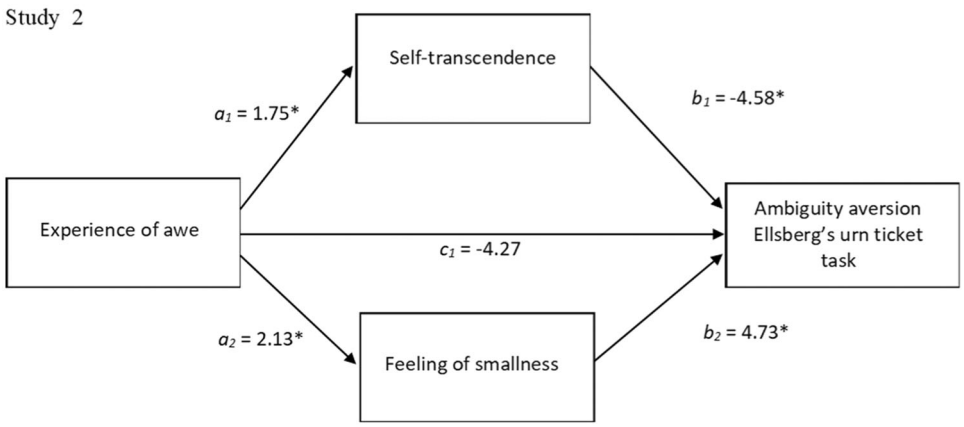

FIGURE 1 Results of study 2.

that awe *increased* consumers' preference for the ambiguous gamble through feelings of self-transcendence (standardized IEs = −0.46, 95% bias-corrected bootstrap confidence intervals (CIs) [−0.93, −0.01]) and *decreased* preference for ambiguous gamble through a sense of smallness (standardized IEs = 0.58, 95% bias-corrected bootstrap CIs [0.14, 1.01]). These findings confirm H2a and H2b.

8 | DISCUSSION

Study 2 results demonstrate the mediating effects of self-transcendence such that awe *increased* consumer preference for the ambiguous gamble (i.e., reduced ambiguity aversion) through feelings of self-transcendence. The results also indicate that a sense of smallness mediated the effects of awe on preference. Specifically, awe *decreased* preference for the ambiguous gamble through a sense of smallness. In other words, awe *increased* preference for the ambiguous gamble through feelings of self-transcendence and *decreased* preference for the ambiguous gamble through a sense of smallness. These contradictory effects may explain why there was not a main effect of the awe manipulation on consumers' ambiguity aversion. Thus, the purpose of study 3 was to address whether the contradictory effects of awe on ambiguity aversion through self-transcendence and a sense of smallness occur with other types of dependent preference measures in a different type of ambiguous choice situation.

9 | STUDY 3

The purpose of study 3 was to extend the findings from studies 1 and 2 by examining the consequences of ambiguity aversion in the context of multiattribute choice behavior (Muthukrishnan et al., 2009). Muthukrishnan et al. posit that consumers signal that they are ambiguity averse when they prefer products associated with a more established brand over products associated with a less established brand, even when those products are dominated on one or more attributes (Muthukrishnan et al., 2009). That is, they argue that consumers often favor established brands over unfamiliar brands because in the former case, quality beliefs are held with greater confidence. Adopting this perspective, how the experience of awe influences consumer preference for more versus less established brands is examined.

9.1 | Method

9.1.1 | Sample

A national sample of 68 adult participants was obtained from Amazon's MTurk. Participants had a median household income of $40,000–$49,999, 38% of participants were female, and the median age was 38. The same eight seven-point items with endpoints strongly disagree/strongly agree used in the previous studies were again used in study 3 to assess consumers' affective responses to the awe-eliciting and control videos.

9.1.2 | Pilot

Study 3 involved a choice between a more (Dell) versus less (Acer) established product; descriptions of the products used in the scenario were like those used by prior researchers (Muthukrishnan et al., 2009). Whereas Muthukrishnan et al. designated Compaq as the less established brand, Acer served as the less established brand in this study because Compaq products have been discontinued. Consequently, a pilot study was conducted to confirm that participants perceived Dell to be a more established brand than Acer. Note that Acer is a Chinese brand, and this fact may also have influenced participants responses. Consumers' beliefs were assessed by the following two, seven-point items with endpoints strongly disagree/strongly agree: "This {Dell or Acer} computer is an established brand-name product; I consider {Dell or Acer} to be an established brand name." Higher values indicate that the brand was perceived to be a more versus a less established brand. Two, seven-point scale items also assessed participants' confidence in their brand beliefs with endpoints strongly disagree/strongly agree: I am confident in my beliefs about the quality of the {Dell or Acer} computer; my beliefs about the product quality of {Dell or Acer} products are very certain. The results of this pretest confirmed expectations and showed that compared to Dell, Acer is a less established brand name (M_{Dell} = 5.06 vs. M_{Acer} = 3.86, $F(1, 98) = 254.91$ $p < 0.0001$, $p < 0.05$) and beliefs about the brand quality are held with lower confidence (M_{Acer} = 5.01 vs. M_{Dell} = 3.88, $F(1, 98) = 92.03$, $p < 0.0001$).

9.1.3 | Experimental design, stimuli, and procedure

Study 3 was a one-way (experience: awe-eliciting vs. control) between-subjects experiment. The identical procedure and awe manipulation used in study 2 was used in study 3. That is, Qualtrics survey software was used to present the stimuli and dependent measures to participants who were randomly assigned to one of the two experimental conditions. Immediately following the presentation of the videos, consumers' emotional responses (i.e., feelings of self-transcendence and sense of smallness) were assessed.

Next, participants were presented with a choice scenario and asked to imagine that they were in the market for a new laptop computer. Two choice options, an Acer laptop computer and a Dell laptop computer were presented. The Dell computer was described as follows: *Dell Laptop Computer with 16 GB of RAM, hexa-core Intel Core i7, 240 GB Hard Drive, and 13.3-inch HD screen*. The Acer was described as follows: *Acer Laptop Computer with 16 GB of RAM, hexa-core Intel Core i7, 256 GB Hard Drive, and 13.3-inch HD screen*. Note that the Acer computer dominated the Dell computer on hard drive size (240 vs. 256 GB).

After descriptions of the two computers were presented, overall attitude toward the option with ambiguous product quality (i.e., the

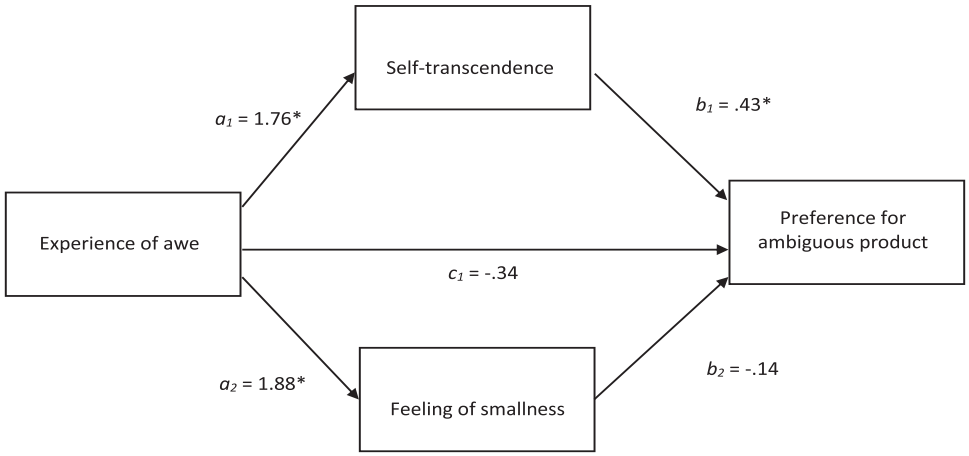

FIGURE 2 Study 3 results.

Acer computer) was measured using three seven-point items (end-points negative/positive, unfavorable/favorable, and bad/good); reliability of the measure was satisfactory (coefficient $\alpha = 0.92$). Higher values indicate a more favorable opinion of the product.

10 | RESULTS

PROCESS Model 4 with 10,000 bootstrap samples was used to examine the direct and IEs of awe (Hayes, 2017). This tested the parallel mediation model shown in Figure 2. As expected, greater feelings of self-transcendence had a positive effect ($b = 0.43$, $t(64) = 2.01$, $p < 0.05$) on attitude toward the product (Acer computer) with ambiguous product quality. Although a sense of smallness had a negative effect on attitude toward the product (Acer computer) with ambiguous product quality, this effect was not significant ($b = -0.14$, $t(64) = -0.77$, $p > 0.05$).

Feelings of self-transcendence mediated the negative effects of awe on ambiguity aversion while a sense of smallness mediated the positive effects of awe on ambiguity aversion. In other words, the results indicate that awe had a positive effect on consumers' attitudes toward the ambiguous product option through feelings of self-transcendence (standardized IEs = 0.46, 95% bias-corrected bootstrap CIs [−0.94, −0.01]) and a negative effect on attitude toward the ambiguous product through a sense of smallness (standardized IEs = 0.60, 95% bias-corrected bootstrap CI [0.13, 1.04]). These findings confirm H2a and H2b. Results did not show a main effect of the awe manipulation on the attitude measure ($b = -0.34$, $t(64) = -0.81$, $p > 0.05$).

11 | DISCUSSION

Study 3 provides a replication of prior findings in a different type of ambiguous choice setting. Participants were presented with two different branded products to consider for purchase, an option with unambiguous (positive) product quality and an option with ambiguous product quality (Acer computer). The results showed that greater feelings of self-transcendence had a positive effect on participants' attitudes toward the Acer computer option, while a sense of smallness had a negative effect on their attitudes toward the same option, although this effect was not statistically significant. These findings confirmed the hypothesis (H2a) by demonstrating that awe-inducing experiences have a positive effect on consumers' attitudes toward products with ambiguous quality features through feelings of self-transcendence. However, H2b, which proposed that awe-inducing experiences would have a negative effect on consumers' attitudes toward products with ambiguous quality features through a sense of smallness, was not supported.

The study also examined the mediating effects of self-transcendence and sense of smallness on the relationship between awe and ambiguity aversion. Findings show that self-transcendence mediates the positive effects of awe on participants' attitudes toward the ambiguous product. In other words, the IE of awe through feelings of self-transcendence results in an increase in the favorability of consumers' attitudes toward a product with ambiguous quality. Findings also show that a sense of smallness mediates the negative effects of awe on participants' attitudes toward the ambiguous product. That is, the IE of awe through feelings of smallness results in a decrease in the favorability of consumers' attitudes toward a product with ambiguous quality. Overall, Study 3 provides evidence that feelings of awe can have both positive and negative effects on consumers' attitudes toward products with ambiguous quality features. The study also highlights the mediating role of self-transcendence and sense of smallness in explaining the relationship between awe and ambiguity aversion.

12 | STUDY 4

The opposing effects of awe, through feelings of self-transcendence and a sense of smallness, raises an important question. Will this pattern of effects be influenced by a consumer's disposition, namely his or her tolerance for ambiguity? This is an important issue since

ambiguity tolerance is an individual difference variable known to influence many types of consumptions behaviors. The purpose of study 4 was to provide insight into this issue.

12.1 | Method

12.1.1 | Sample

A national sample of 63 adult participants was obtained from Amazon's MTurk. Participants had a median household income of $50,000–$59,999, 52.9% of participants were female, 88% had at least some college or higher level of education, and the median age was 40.

12.1.2 | Experimental design, stimuli, and procedure

Study 4 follows the same experimental design as studies 2 and 3 with the addition of (trait) ambiguity tolerance as a measured moderator. Thus, it was a two-way between-subjects experiment, with one manipulated (experience: awe-eliciting vs. control) and one measured (ambiguity tolerance) variable between-subjects experiment. Participants were randomly assigned to either the test or control video. The same procedure used in the prior studies was implemented in this study. However, to enhance the generalizability of this research, the videos used in this study differed from those used in the previous studies. More specifically, a 2-min clip from the television series *Planet Earth* (season 1, episode 9) served as the awe-eliciting stimulus. As noted earlier, pretests were conducted to identify potential stimuli. This clip was among those tested in both pilot studies. It featured the earth's beauty below the ocean surface and featured colorful fish and coral reefs; a soundtrack from the Planet Earth television series accompanied the video. A different 2-min control video that featured farm animals (e.g., foraging hens, cattle) was also used. After viewing one of the two videos, participants' emotional responses were assessed.

Next, a brief choice scenario was presented. Participants were first asked to imagine that they needed pain relief. Then the following information about a new over the counter (OTC) pain-relieving drug with unknown (ambiguous) health-related risks was presented: "Before Drug A could be sold to consumers, several different clinical trials had to be conducted. However, results from the clinical trials were not conclusive. One study found that 2 out of every 1000 consumers experienced serious side effects and had to immediately stop using the product. A second clinical study that used a different group of consumers reported that 14 out of every 1000 consumers experienced serious side effects and had to immediately stop using the product. The risk of serious side effects may be as low as 2 out of every 1000 consumers to as high of 14 out of every 1000 consumers."

After the product was described, purchase intention was assessed by two seven-point scale items ($r = 0.98$) drawn from prior research (Berry et al., 2017) as follows: How likely would you be to purchase this product, given the information shown (with endpoints very unlikely/very likely and not probable/very probable)? Then several intervening tasks were administered before participants' ambiguity tolerance was measured using five items from the Tolerance for Ambiguity Scale developed by Judge et al. (1999). Higher values indicate a greater tolerance for ambiguity (coefficient $\alpha = 0.83$).

13 | RESULTS

PROCESS Model 8 with 10,000 bootstrap samples was used to test the hypothesis. The primary dependent measure was the intention to purchase a new OTC drug with ambiguous health-related risks. The full model included a manipulated independent variable (experience: awe-eliciting vs. control), a measured independent variable (ambiguity tolerance), the interaction between experience and ambiguity tolerance, and two potential mediators (i.e., a sense of smallness and feelings of self-transcendence). Results show a main effect of the awe manipulation on purchase intention ($b = 1.40$, $t(57) = 2.28$, $p < 0.05$). Although the awe manipulation was expected to have a negative influence on purchase intentions, results show that its effects on purchase intentions was positive. However, there was a negative main effect of smallness ($b = -0.77$, $t(57) = -2.90$, $p < 0.05$) and a positive a main effect of self-transcendence ($b = 0.79$, $t(57) = 2.75$, $p < 0.05$) on purchase intentions. Intentions to purchase an OTC drug product with ambiguous health-related risks was not influenced by ambiguity tolerance ($b = -0.09$, $t(57) = -0.40$, $p > 0.05$).

Consumers' feelings of self-transcendence were influenced by a positive main effect of the awe manipulation ($b = 0.91$, $t(59) = 2.85$, $p < 0.01$) and by a significant interaction between awe and ambiguity tolerance ($b = -0.81$, $t(59) = -2.59$, $p < 0.05$). The awe manipulation resulted in an increase in feelings of self-transcendence when ambiguity tolerance was low (1 SD below the mean) ($b = 2.84$, $t(59) = 5.82$, $p < 0.0001$). Awe had no effect on feelings of self-transcendence when ambiguity tolerance was high (1 SD above the mean) ($b = 0.08$, $t(59) < 1$, $p > 0.10$).

Consumers' sense of smallness was influenced by a positive main effect of the awe manipulation ($b = 2.10$, $t(59) = 6.06$, $p < 0.0001$) and by a significant interaction between awe and ambiguity tolerance ($b = -0.73$, $t(59) = -2.15$, $p < 0.05$). The awe manipulation resulted in a larger increase in a sense of smallness when tolerance for ambiguity was low (1 SD below the mean) ($b = 2.84$, $t(59) = 5.82$, $p < 0.0001$). The awe manipulation had a smaller, yet significant, effect on smallness when ambiguity tolerance was high (1 SD above the mean) ($b = 1.35$, $t(59) = 2.75$, $p < 0.01$). Intentions to purchase an OTC drug product with ambiguous health-related risks was not influenced by the awe by ambiguity tolerance interaction ($b = -0.78$, $t(57) = -1.62$, $p < 0.05$).

Ambiguity tolerance was expected to moderate the mediated effects of awe on purchase intention as discussed in H3a and H3b. As expected, the index of moderated mediation for ambiguity tolerance was significant for both smallness (index of

moderated mediation = 0.56, 95% bias-corrected bootstrap CIs [0.07, 1.23]) and self-transcendence (index of moderated mediation = −0.64, 95% bias-corrected bootstrap CIs [−1.26, −0.08]). Results show that the *negative* effects of awe on purchase intention, mediated by smallness, were stronger (weaker) when ambiguity tolerance was lower (higher) as shown by the following measures for consumers with low, moderate, and high levels of ambiguity tolerance, respectively (standardized IEs = [−2.17, −1.60, −1.03], 95% bias-corrected bootstrap CIs [−3.74, −0.85], [−2.74, −0.63], [−0.2.09, −0.20]). Similarly, the positive effects of awe on purchase intention, mediated by self-transcendence, were stronger (weaker) when ambiguity tolerance was lower (higher) as shown by the following measures for low, moderate, and high levels of ambiguity tolerance, respectively (standardized IEs = [1.36, 0.71, 0.06], 95% bias-corrected bootstrap CIs [0.48, 2.38], [0.16, 1.40], [−0.67, 0.87]). When ambiguity tolerance was high, the mediating effect of self-transcendence was not significant.

14 | DISCUSSION

Consistent with prior studies, the results of study 4 indicate that a sense of smallness associated with the experience of awe increases ambiguity aversion while feelings of transcendence had the opposite effect. Higher (lower) self-transcendence levels are associated with higher (lower) consumer intentions to purchase a product with ambiguous health-related risks while higher (lower) smallness levels are associated with lower (higher) purchase intentions. The results also indicate that ambiguity tolerance, an individual difference variable, moderated the mediated effects of awe on purchase intention. Specifically, the *negative* effects of awe on purchase intention, mediated by smallness, were stronger (weaker) when ambiguity tolerance was lower (higher). Similarly, the positive effects of awe on purchase intention, mediated by self-transcendence, were stronger (weaker) when ambiguity tolerance was lower (higher). This pattern of results suggests that a consumer's enduring tolerance for ambiguity plays an important role in determining how much the experience of awe will influence his or her product-related responses. Consumers who are more tolerant of ambiguity have more positive opinions of ambiguous products, in general, and this predisposition seems to limit the influence of awe-elicited affective responses on purchase intentions.

14.1 | Study 5

The results of these studies consistently show that the experience of awe influences evaluative and choice processes in ambiguous choice situations. The purpose of study 5 was to determine whether our key findings, namely the opposing effects of feelings of self-transcendence and a sense of smallness on ambiguity aversion, are replicable in choice situations with real monetary consequences.

14.2 | Method

14.2.1 | Sample

A sample of 112 adults on the campus of a university located in the Pacific Northwest served as participants. Participants were recruited in-person and asked to participate in the study in exchange for a free coffee or tea from a nearby coffee kiosk. In addition, participants were eligible to enter a lottery for a chance to win one of two $50 Visa gift cards. To ensure that participants took the experimental task seriously, their choices determined which one of two lottery games they would potentially be eligible to play.

14.2.2 | Experimental design, stimuli, and procedure

Study 5 was a one-way (experience: awe-eliciting vs. control) between-subjects experiment conducted in a behavioral business lab. Participants, randomly assigned to one of the two experimental conditions, were run individually. Upon arrival at the lab, participants were seated at a computer; Qualtrics software was used to present the stimuli and most of the dependent measures. The same treatment (i.e., awe-eliciting) and control videos used in studies 2 and 3 were utilized in this experiment. Immediately following the presentation of the videos, participants' emotional responses (i.e., feelings of self-transcendence and a sense of smallness) were assessed using the measures used in the prior studies. Demographic information was then collected.

14.2.3 | Task and dependent measures

After emotional responses were collected, participants were asked to move from the computer lab to a seat at a table in an adjoining room. Two one-quart Mason jars, used to present Ellsberg's classic urn paradox problem to participants, were prominently displayed on the table. Both jars contained a mixture of clear and red glass, marble-like gems. Jar A was clear, and Jar B had been painted gray so the proportion of red-to-white glass gems could not be seen. In front of each jar was a small basket.

After participants read the instructions, an experimenter asked if they understood the game and their task. Participants could ask for clarification at this time. Finally, participants were given five game tickets to place in the baskets; the experimenter recorded the responses. Note that Jar A represents the known risk (i.e., a 50/50 chance of selecting a white or red glass gem) and Jar B represents the ambiguous risk (i.e., the proportion of white and red glass gems is unknown. A measure of ambiguity aversion was created by subtracting the number of tickets allocated for Jar B from the number of tickets allocated for Jar A. Higher values indicate greater ambiguity aversion.

15 | RESULTS AND DISCUSSION

Model 4 with 10,000 bootstrap samples was used to examine the direct and IEs of the awe manipulation and the feelings elicited by that manipulation on ambiguity aversion (Hayes, 2017). The ambiguity aversion measure described above was regressed on the experience (awe-eliciting vs. control) factor. There was a negative main effect of the manipulation on the ambiguity measure ($b = -3.01$, $t(107) = -4.13$, $p < 0.0001$) and feelings of self-transcendence had a negative effect ($b = -0.50$, $t(107) = -2.16$, $p < 0.05$) on ambiguity aversion. That is, feelings of self-transcendence increase preference for the ambiguous option. However, a sense of smallness did not influence participants' preference for the ambiguous option.

A mediation effect through feelings of self-transcendence was expected to have a negative influence on consumers' aversion to ambiguity while the mediation effect through a sense of smallness was expected to have a positive effect on ambiguity aversion. As predicted in H2a, the results indicate that awe increased consumers' preference for the ambiguous option through feelings of self-transcendence (standardized IEs = −1.27, 95% bias-corrected bootstrap CIs [−2.45, −0.15]). Contrary to expectation, a sense of smallness did not mediate the effects of awe on ambiguity aversion (standardized IEs = 0.21, 95% bias-corrected bootstrap CIs [−1.22, 1.47]). Thus, the results of study 5 partially support expectations. Feelings of self-transcendence elicited by the experience of awe increased preference for the ambiguous option in a choice context that had significant monetary consequences for participants. Interestingly, a sense of smallness did not influence ambiguity aversion in this real-world situation. This finding suggests that further research is warranted to better understand the factors that influence the effects of a sense of smallness on choice behavior.

16 | GENERAL DISCUSSION

Firms are using innovative tools to deliver unique brand experiences to consumers throughout the purchase journey. For example, awe-eliciting virtual and AR applications can help consumers experience products in their own homes. Awe is also often experienced by consumers who are immersed in an online brand community. Given that many of the customer-oriented brand interactions in popular use by marketers today are designed to elicit awe, it is important for firms to understand its effects on consumers' feelings, beliefs, and behaviors. Furthermore, product ambiguity is likely to become an increasingly common feature of the choice environment as shoppers' purchasing behaviors continue to shift on-line. This has increased the need to better understand how product ambiguity affects choice behaviors. The main goal of this research was to examine how the experience of awe influences consumers' product-related feelings, beliefs, and choices in ambiguous choice contexts.

This research provides insight into the potential mechanisms of action associated with the experience of awe, namely a feeling of self-transcendence and a sense of smallness. Several important theoretical contributions of this research should be noted. First, the results show that the experience of awe elicits distinct feelings, namely feelings of being part of something that is bigger than oneself (self-transcendence) and a sense of smallness. Second, these two emotional responses are distinct and have opposing effects on consumers' responses. More specifically, prior research has tended to focus on awe as an emotion that is elicited by an "awesome" experience. However, our research considers other emotions elicited by an "awesome" experience. In general, the results shows that feelings of self-transcendence associated with the experience of awe have a negative influence on ambiguity aversion. On the other hand, feelings of smallness associated with the experience of awe have a positive influence on ambiguity aversion. That is, feelings of self-transcendence increase tolerance for product ambiguity, while a sense of smallness has the opposite effect. Third, the research findings also show that these feelings mediate the main effect of awe on choice preferences. Whereas self-transcendence mediates the negative effects of awe on ambiguity aversion, feelings of smallness mediate the positive effects of awe on ambiguity aversion. That is, awe decreases consumers' ambiguity aversion through self-transcendence and increases ambiguity aversion through feelings of smallness.

16.1 | Managerial implications

The findings from these studies demonstrate that awe elicited by extraordinary brands or brand experiences can have both potentially positive and negative downstream effects on consumers' behaviors. Consequently, brands with unique innovative designs, unexpected features, or exceptional quality need to be cognizant of the potential influence awe could have on consumers' purchase decisions. Better understanding how the experience of awe influences consumption behaviors may be especially beneficial to marketers of luxury brands. Kim et al. (2020) define brand awe as emotions that are experienced when a luxury or premium brand, that is, perceived to be vast is encountered. That is, perceptual accommodation is required when consumers encounter premium brands that exceed expectations because they are highly innovative, esthetically remarkable, and of excellent quality (Kim et al., 2020). Better understanding how the experience of awe influences consumption behaviors may be beneficial to marketers of luxury brands. For example, Kim et al. (2020) define brand awe as emotions that are experienced when a luxury or premium brand that is perceived to be vast is encountered. That is, perceptual accommodation is required when consumers encounter premium brands that exceed expectations because they are highly innovative, esthetically remarkable, and of excellent quality (Kim et al., 2020). Their research demonstrates that brand awe is positively related to consumers' inclination to interact with the brand and share information about it.

Marketing managers should also pay special attention to the potential influence ambiguous product information could have on consumers' choice and decision processes. For example, it may in a firm's best interests to ensure that product-related information is unambiguous to minimize the likelihood of negative effects on choice

outcomes resulting from consumers' sense of smallness Given the potentially positive effects of awe on purchase intentions and choice preferences, firms could leverage the effects of awe in their marketing communications (e.g., ads, videos, or other content). This is turn is likely to have a positive influence on consumers' engagement with the brand. Firms could design their retail environments to create a sense of awe among consumers. For example, lighting, colors, and other visual elements could be used to create a more immersive and awe-inspiring experience.

Brands could also potentially benefit from awe-inspiring products and experiences if consumers demonstrate a willingness to pay a premium for products that evoke strong emotional responses such as awe. Overall, better understanding the effects of awe on consumer behavior can help firms develop more effective marketing strategies, design better products, and create more memorable customer experiences.

16.2 | Limitations and opportunities for future research

The current research has some limitations that open several avenues for additional research. In this research, videos presented online were used to elicit awe. There are many other circumstances that are known to elicit awe and therefore the ability to generalize the results is limited. For example, prior research has demonstrated that grand cathedrals, the natural environment, and so forth are often associated with feelings of awe. Whether the pattern of results found in this research can be replicated in other types of environments is an important question that should be addressed. In addition, advances in technology are transforming how individuals engage information online. Interest in AR and virtual reality (VR), across a variety of applications continues to increase. In fact, the metaverse has the potential to revolutionize how businesses interact with consumers. Given the novelty of a three-dimensional experience, it seems likely that many consumers will initially experience some level of awe when first engaging with the metaverse. Whether the influence of awe on decision making processes in VR and AR are like its effects in in the "real world" is a question with significant managerial implications. Exploration of this issue creates many opportunities for additional research. This research only considered two positive emotions elicited by the experience of awe, self-transcendence, and a feeling of smallness. However, the full aspects of these emotions have not been examined. For example, perhaps self-transcendence and feelings of smallness can be better understood in terms of a continuum, rather than as distinct emotions. Future researchers also have the opportunity to explore different emotions, both positive and negative, elicited by awesome experiences.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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