Article

Images of Nature, Nature-Self Representation, and Environmental Attitudes

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Abstract: Prior work suggests that feeling small relative to nature (Nature-Self Size; NSS) and inclusion of nature in the self-concept (INS) are both associated with more pro-environmental attitudes. The present experiment asked whether exposure to stimuli eliciting awe—an emotion often evoked by extraordinary panoramic views of nature, characterized by subjective experience of “small self” and modulation of reliance on stored concepts—leads to increased NSS and/or INS, thereby promoting pro-environmental policy attitudes. Participants in this online experiment were randomly assigned to view photographs of extraordinary panoramic nature scenes, prosaic nature images, desirable foods, or neutral scenes before completing measures of INS, NSS, and support for environmental conservation policies. Analyses revealed that INS significantly mediated the effects of exposure to panoramic nature scenes (versus a neutral control) on pro-environmental policy attitudes; however, the same effect was observed for the prosaic nature and tasty foods images. Results suggest that exposure to awe-eliciting stimuli can promote pro-environmental attitudes via modulation of the self-concept, but this may be due to pleasant affect rather than awe per se. Future research with real-life stimuli and longitudinal designs is needed to further examine the lasting effects of awe and other emotional states on the self-concept and associated environmental attitudes.

Keywords: awe; nature; positive emotion; positive affect; environmental attitudes; self-concept

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1. Introduction

As the effects of climate change become increasingly apparent, scientists across many disciplines agree—human behavior is impacting the environment. As our populations grow, natural habitats become fragmented, leading to the loss of tree cover [1]. Worldwide and regional ecosystems have already begun to lose valuable insect species, the backbone of such ecosystems [2,3]. Endemic flora that support soil health, provide structure for animal and human habitats, and feed our growing populations also face growing risk of extinction [4]. At this critical point, the attitudes we hold about environmental protection and conservation, and the policies we enact reflecting those attitudes, will help determine the future of human health, the economy, and survival of the planet.

Pro-environmental attitudes are broadly conceptualized as positive evaluations of the natural environment, whether in terms of concern about the environment or pro-environmental stances on policy [5]. Pro-environmental attitudes matter because they are associated with greater propensity toward actual pro-environmental behavior, such as recycling and using public transportation, as well as increased intentions to engage in pro-environmental behavior [6]. A meta-analysis of 57 data sets revealed that pro-environmental attitudes were consistently positively associated with greater pro-environmental behavior (random-effects mean correlation $r = 0.42$), a relationship accounted for primarily by pro-environmental behavioral intentions (intentions–behavior random effects mean correlation

$r = 0.52$) [7]. Environmental attitudes have been among the most commonly researched topics in environmental psychology [5], yet we still have much to learn about the antecedents and consequences of these attitudes.

Adding complexity to this field, a wide range of measures is used to capture pro-environmental attitudes [8]. Many of these presume an eco-centric perspective, with items assessing agreement with statements about the importance of protecting the environment and preserving natural resources. In these measures, it is relatively easy to express a pro-environmental stance because the costs of environmental preservation are not emphasized. However, some measures also include items reflecting an alternative, anthropocentric perspective in which natural resources exist for human use [5,9]. Researchers increasingly acknowledge the real tradeoffs between protecting the environment (eco-centric priorities) and maximizing human comfort and economic growth (anthropocentric priorities). The Environmental Attitudes Inventory (EAI) explicitly pits these priorities against each other in some items [5]. Capturing attitudes by using a tradeoff model in this way has implications not only for individuals' behavior, but also their support (or lack thereof) for government policies aimed at protecting the environment.

A growing body of research suggests that people's attitudes regarding the value of environmental protection are related to their broader conceptualization of the relationship between nature and the self. Two specific constructs are of particular interest here. The first is Inclusion of Nature in the Self (INS), defined as the degree to which people include a relationship with nature in their own self-concept [10–12]. The INS construct, measure, and research build on prior interpersonal-relationship work showing that people's commitment to relationship partners is predicted by the extent of overlap between their self-concept and their concept of the partner [13]. Similarly, work in environmental psychology suggests that when people's self-concepts overlap more with nature, they tend to be more committed to nature. For example, people with greater self-nature overlap tend to report more pro-environmental attitudes and behaviors [12,14].

Recent work has also asked how a second construct, the perceived *size* of nature relative to the self—known as Nature Self-Size (NSS)—is associated with environmental attitudes [14]. People who see nature as larger relative to the self tend to report more pro-environmental attitudes, pro-environmental behaviors, and biospheric concern, much as is seen with INS [14]. Even after accounting for INS, greater NSS is uniquely associated with a more liberal ideology, belief that climate change is caused by humans, and endorsement of other-oriented values (which may have positive implications for pro-environmental behaviors) [14]. Thus, NSS may also be an important contributor to pro-environmental attitudes and behaviors.

The present study asks whether exposure to a particular kind of visual stimuli—extraordinary, panoramic views of nature—increases INS and/or NSS, with downstream effects on attitudes supporting pro-environmental policies. In much prior research, images of this kind have been found to evoke the emotion of awe [15–18]. Our preregistered hypotheses were that (1) viewing awe-eliciting images would lead to significantly more pro-environmental policy attitudes than viewing more prosaic nature images, pleasant images of tasty foods, or neutral images; and (2) that the effect of exposure to awe-eliciting images would be mediated by NSS, and possibly by INS as well.

Why did we focus on awe-eliciting images? Beyond evidence that awe is commonly evoked by images of nature [15], a robust body of evidence shows that a feeling of “small self” strongly characterizes the subjective experience of awe [15,17,19,20]. This suggests that the experience of awe should lead to an increase in NSS. Moreover, studies of distinct effects of awe on cognitive processing suggest that this emotion may promote a brief period in which stored concepts are less activated, and perhaps more malleable than at other times. In one series of studies, in which participants listened to a detailed audio story describing a dinner date, experimental elicitation of awe prior to hearing the story (through video, relived experience, or photographic images) uniquely led to reduced intrusion of prototypical “romantic dinner” details absent from the story into memory for the story

(i.e., based on one's stored concept of a dinner date); this effect was mediated in part by the subjective experience of awe [16]. If one's stored *self*-concept also becomes less intrusive/more open to influence during awe, the experience of awe evoked by nature might lead to increased INS.

In one recent experiment, researchers manipulated NSS by instructing participants to write about a time when they felt larger (or smaller) than nature; results showed that those in the high-NSS condition reported greater awe [14]. In another series of studies, researchers demonstrated effects of experimentally induced awe on Connectedness to Nature (a construct similar to INS), which in turn predicted more pro-environmental behavioral intentions relative to control conditions [21]. The present study builds on this earlier work in multiple ways. First, it tests both INS and NSS as possible mechanisms by which exposure to awe stimuli might influence pro-environmental policy attitudes. Second, it examines downstream effects on EAI scores, capturing attitudes about environmental policies in ways that explicitly acknowledge tradeoffs between eco-centric and anthropocentric priorities. Third, our experimental design includes multiple active-control conditions evoking positive affect states other than awe, as well as a neutral-affect control condition. This allows us to test whether our effects are specific to awe-eliciting stimuli, or generalize to pleasant but non-awe responses to nature, and/or to appetitive enthusiasm evoked by photos of appetizing foods—a very different kind of pleasant affect. As we shall see, this last feature of the study proved particularly important for the interpretation of results.

2. Materials and Methods

2.1. Participants

A total of 406 participants were recruited on Amazon Mechanical Turk (MTurk) via CloudPrime and participated in exchange for \$1.25. Participants were required to reside in the U.S. at the time of the study, to be at least 18 years of age, and to be fluent in English. Data from 16 participants were removed from analyses due to an incorrect or missing response on an attention check measure, leaving valid responses from a final sample of 390 participants (215 male, 174 female). Participants ranged in age from 20 to 83 years ($M = 41.82$, $SD = 12.80$), and 77.9% of participants identified as White, 5.4% as Black or African-American, 5.4% as East Asian, 4.9% as Hispanic or Latino/Latina, and the remaining 6.4% of participants identified with other races/ethnicities. Participants also ranged in educational attainment from less than high school to a doctoral degree, with a modal educational attainment of a 4-year degree (40.5% of participants). They varied in political affiliation as well, with 47.9% of participants identifying as Democrats, 23.1% identifying as Republicans, 24.9% as Independents, and the remaining 4.1% identifying with some other party. Participants also rated their political ideology using 7-point Likert-type items from 1 = Strongly Conservative to 7 = Strongly Liberal, with separate items for economic, social, and overall ideology. Preliminary analyses of variance (ANOVAs) indicated successful randomization, with no significant effects of experimental condition on any of the ideology variables.

2.2. Materials and Measures

2.2.1. Emotion Stimuli

In each condition, participants viewed twelve photographs depicting stimuli intended to evoke a specific affective state. All files were scaled to 1024×768 to fill the participant's computer window, and all were saturated color photos. The awe condition photos depicted panoramic nature scenes from a variety of biomes and perspectives (e.g., from the top of a mountain, or inside of a vivid and unique canyon), exemplifying the vastness and novelty that characterize awe stimuli [15,22]. The non-awe nature condition photos depicted pleasant but non-panoramic natural scenes such as flowers, grassy hillsides, banks of trees, and streams. The appetitive enthusiasm condition photos included an equal mix of sweet and savory foods, such as cookies, donuts, potato chips, fried chicken, and pizza. The

neutral condition included photos of everyday objects and scenes, such as the interior of a kitchen. The set of images for each condition is available from the corresponding author upon request.

Stimuli were validated using a separate sample of MTurk participants, randomly assigned to view one of the four sets of images and to rate their emotional experience while viewing them ($N = 117$ who passed attention check; Awe, $n = 28$; Non-Awe Nature, $n = 30$; Appetitive Enthusiasm, $n = 30$; Neutral Control, $n = 29$). Results of a univariate analysis of variance (ANOVA) revealed a significant omnibus effect of emotion condition on how strongly participants felt awe/wonder (1 = No emotion–9 = Strongest ever felt) while looking at the photographs, $F(3, 113) = 28.265$, $p < 0.001$, partial eta squared = 0.200. Simple contrasts indicated that the Awe images ($M = 7.29$, $SD = 1.30$) elicited significantly greater awe/wonder than the Non-Awe Nature images ($M = 5.23$, $SD = 2.70$, $p = 0.001$), the Appetitive Enthusiasm images ($M = 4.87$, $SD = 2.68$, $p < 0.001$), and the Neutral images ($M = 4.10$, $SD = 2.43$, $p < 0.001$).

In addition to awe, participants rated the valence of their subjective affect while viewing the assigned photo set. Results of a univariate analysis of variance (ANOVA) revealed a significant omnibus effect of emotion condition on affect valence (1 = Very Negative, 5 = Neutral, 9 = Very Positive) while viewing the photos, $F(3, 113) = 6.974$, $p < 0.001$, partial eta squared = 0.156. Simple contrasts indicated that the Neutral images ($M = 6.59$, $SD = 1.68$) evoked significantly less-positive affect than the Awe images ($M = 8.25$, $SD = 0.97$, $p < 0.001$), the Non-Awe Nature images ($M = 7.73$, $SD = 1.38$, $p = 0.002$), and the Appetitive Enthusiasm images ($M = 7.60$, $SD = 0.26$, $p = 0.007$), although even the Neutral images evoked mildly pleasant affect (i.e., above the scale midpoint of 5). There were no significant differences among the Awe, Non-Awe Nature, and Appetitive Enthusiasm stimuli with respect to affect valence. Taken together, these analyses validate the intended emotional effects of the stimuli used in the main study.

2.2.2. Questionnaire Measures

Inclusion of Nature in Self (INS) was measured using a single item used in prior research [14]. Participants were instructed: “Please select the image below that best reflects how much you view nature as included in your sense of self,” and given a series of seven sets of two circles (one representing the self and one representing nature) to choose from. These seven options ranged from 1 (in which the circles show no overlap/inclusion of the nature in the self) to 7 (in which the circles show nearly complete overlap/inclusion of the nature in the self).

Nature-Self Size (NSS) was also measured using a single item used in prior research [14]. Participants were instructed: “Without considering your answer to the previous question, please select the image below that best reflects your sense of size relative to nature”, and they were given a series of seven sets of two circles (one representing the self and one representing nature) to choose from. These seven options ranged from 1 (in which the “self” circle is much larger than the “nature” circle) to 7 (in which the “nature” circle is much larger than the “self” circle).

Environmental policy attitudes were measured using the “Support for Interventionist Conservation Policies” scale of the Environmental Attitude Inventory (EAI) [5], which reflects the tradeoff between environmental and economic welfare. The scale included ten seven-point Likert items, with response options ranging from 1 (“Strongly disagree”) to 7 (“Strongly Agree”). Five items on the scale were direct-scored (e.g., “Controls should be placed on industry to protect the environment from pollution, even if it means things will cost more”) and five items were reverse-scored (e.g., “Industries should be able to use raw materials rather than recycled ones if this leads to lower prices and costs, even if it means the raw materials will eventually be used up”). With all items properly coded, Cronbach’s $\alpha = 0.937$ in the present sample.

2.3. Procedures

Participants were recruited using a posting on MTurk, which outlined the study expectations and compensation. A link from the recruitment posting directed them to an external Qualtrics survey. Upon following this link, participants read an information letter explaining the study in more detail, and consent to participate was indicated by clicking to continue with the survey. At this point, participants were randomly assigned to one of the four image conditions (Awe, $n = 97$; Non-Awe Nature, $n = 96$; Appetitive Enthusiasm, $n = 101$; Neutral Control, $n = 96$). In their assigned condition, participants saw a set of twelve images, each of which appeared on their screen for ten seconds before automatically advancing to the next image. Participants were instructed to study the images closely and allow any emotional responses to the images they might have. After viewing the images, participants completed the INS, NSS, and EAI measures, in that order. Participants then provided demographic information and reviewed a debriefing statement that explained the goals of the study and provided instructions for receiving their compensation. Prior to data collection, this study was reviewed and declared exempt from further IRB oversight by the Institutional Review Board at the Office of Research Integrity and Assurance at Arizona State University (Study 00013615).

3. Results

The sample size, primary analysis plan, and hypotheses were preregistered and can be found at https://osf.io/hcnjf/?view_only=081993478f734109bc5b040d787298ef. (accessed on 18 July 2021) Anonymized data are at: https://osf.io/hbavq/?view_only=60e036ab49864feeb3abeac75af8211e (accessed on 18 July 2021), along with lavaan output. Mediation analyses were conducted using the lavaan package in the R environment.

3.1. Hypothesis 1: Effect of Awe-Eliciting Images on EAI Scores

The effect of exposure to awe-eliciting images on EAI scores, relative to the three alternative conditions, was examined through univariate analysis of variance (ANOVA) with simple pairwise contrasts in SPSS version 22. The omnibus effect of emotion condition was not significant, $F(3, 386) = 1.646$, $p = 0.178$, partial eta squared = 0.013. Results of simple contrasts suggested differences in the predicted direction, approaching significance for the comparison between the Awe condition ($M = 4.75$, $SD = 0.96$) and the Appetitive Enthusiasm condition ($M = 4.47$, $SD = 0.99$; $p = 0.053$) and between the Awe condition and the Neutral Control condition ($M = 4.50$, $SD = 1.10$, $p = 0.095$). There was no indication of difference between the Awe and Non-Awe Nature conditions ($M = 4.66$, $SD = 1.12$, $p = 0.541$) when it came to directly predicting EAI scores.

3.2. Hypothesis 2: Mediation of Image Effects via NSS and/or INS

Figure 1a illustrates results of a mediation path analysis model in lavaan in which exposure to the Awe (versus the Neutral Control) images predicted INS and NSS, which in turn predicted EAI scores. Contrary to hypotheses, neither the path from Awe to NSS (Estimate = 0.315, $SE = 0.242$, $z = 1.304$, $p = 0.192$), nor the path from NSS to EAI scores (Estimate = 0.069, $SE = 0.043$, $z = 1.596$, $p = 0.110$) was significant, though all effects were in the predicted direction. However, the path from Awe to INS was significant (Estimate = 0.577, $SE = 0.243$, $z = 2.373$, $p = 0.018$), as was the path from INS to EAI scores (Estimate = 0.174, $SE = 0.042$, $z = 4.116$, $p < 0.001$). The indirect effect running from Awe to EAI scores through INS (i.e., the $a * b$ path) was significant (Estimate = 0.101, $SE = 0.049$, $z = 2.056$, $p = 0.040$). Thus, the analysis indicates an effect of exposure to awe-eliciting images (relative to neutral images) on EAI that is mediated by INS, but not NSS.

Figure 1. Results of lavaan path analyses illustrating unstandardized effects of emotion condition with mediation paths through INS and NSS: for (a) the Awe versus Neutral Control conditions; (b) the Non-Awe Nature versus Neutral Control conditions; (c) and the Appetitive Enthusiasm versus Neutral Control conditions. * $p < 0.05$; *** $p < 0.001$.

3.3. Exploratory Analyses

Exploratory analyses investigated whether either of the active control conditions (Non-Awe Nature and Appetitive Enthusiasm) also led to heightened INS and/or NSS scores, relative to the Neutral Control condition, thereby asking whether the effects reported above were specific to awe.

The omnibus effect of emotion condition in predicting INS was significant, $F(3, 386) = 4.392$, $p = 0.005$, partial eta squared = 0.033. Results of simple contrasts indicated that, in addition to the Awe image condition ($M = 4.64$, $SD = 1.62$; $p = 0.014$, both the Non-Awe Nature ($M = 4.90$, $SD = 1.63$; $p < 0.01$) and Appetitive Enthusiasm ($M = 4.55$, $SD = 1.50$; $p = 0.035$) conditions significantly increased INS relative to the Neutral Control condition ($M = 4.06$, $SD = 0.177$). The omnibus effect of emotion condition in predicting NSS was not significant, nor were any pairwise contrasts between the Neutral Control condition and any other condition.

Because the Non-Awe Nature and Appetitive Enthusiasm conditions also led to heightened INS, and the primary mediation analyses suggested a significant pathway from INS to EAI scores, we elected to conduct parallel mediation analyses pitting each of these conditions against the Neutral Control. This allowed us to investigate the specificity of the INS-mediated effect to awe-inspiring nature scenes alone, rather than other pleasant images of nature and/or images evoking a very different kind of positive emotion.

Figure 1b illustrates results of a mediation path analysis model in lavaan in which exposure to the Non-Awe Nature (versus the Neutral Control) images predicted INS and NSS, which in turn predicted EAI scores. As with the Awe images, the path from Non-Awe Nature to INS was significant (Estimate = 0.833, $SE = 0.244$, $z = 3.416$, $p = 0.001$), as was the path from INS to EAI scores (Estimate = 0.201, $SE = 0.044$, $z = 4.528$, $p < 0.001$). The indirect effect running from Non-Awe Nature to EAI scores through INS (the $a * b$ path) was significant (Estimate = 0.168, $SE = 0.061$, $z = 2.727$, $p = 0.006$). Neither the path from Non-Awe Nature to NSS (Estimate = -0.042 , $SE = 0.229$, $z = -0.182$, $p = 0.856$), nor the path from NSS to EAI scores (Estimate = 0.091, $SE = 0.049$, $z = 1.878$, $p = 0.060$) was significant.

Figure 1c illustrates results of a mediation path analysis model in lavaan in which exposure to the Appetitive Enthusiasm (versus the Neutral Control) images predicted INS and NSS, which in turn predicted EAI scores. As with the Awe images, the path from Appetitive Enthusiasm to INS was significant (Estimate = 0.492, $SE = 0.232$, $z = 2.119$, $p = 0.034$), as was the path from INS to EAI scores (Estimate = 0.156, $SE = 0.044$, $z = 3.518$, $p < 0.001$). The indirect effect running from Appetitive Enthusiasm to EAI scores through INS (i.e., the $a * b$ path) approached significance, though it did not cross this threshold

(Estimate = 0.077, SE = 0.042, $z = 1.815$, $p = 0.070$). Neither the path from Appetitive Enthusiasm to NSS (Estimate = 0.196, SE = 0.226, $z = 0.866$, $p = 0.386$), nor the path from NSS to EAI scores (Estimate = 0.083, SE = 0.046, $z = 1.810$, $p = 0.070$) was significant.

4. Discussion

The present study asked whether exposure to extraordinary panoramic nature scenes, of the kind found in prior research (and our validation data) to evoke the emotion awe, would lead to increased endorsement of pro-environmental policies (with potential economic tradeoffs), and whether this is accounted for by the effect of awe stimuli on aspects of the self-concept in relation to nature. We hypothesized that exposure to awe-eliciting images would promote pro-environmental policy attitudes, with an increased sense that nature is greater than the self (i.e., higher NSS) mediating this effect. Results suggested that exposure to awe-eliciting panoramic nature scenes had the predicted effect on policy attitudes, but through a different mechanism—heightened inclusion of nature in the self-concept (INS)—rather than NSS.

Moreover, exploratory follow-up analyses suggested that this effect was not specific to awe-eliciting scenes. When the effects of non-awe-inducing nature scenes and images of desirable foods (i.e., appetitive enthusiasm) were compared against a neutral control condition, these *also* increased INS, which in turn led to increased endorsement of pro-environmental policies. The indirect effect was significant for the Non-Awe Nature condition, and approached significance for the Appetitive Enthusiasm condition.

These findings support the general proposal that exposure to beautiful scenes of nature might help promote pro-environmental policy attitudes. This is important, because as noted in prior research, such images can play a valuable role in messaging aimed at promoting pro-environmental attitudes and behavior [23]. At the same time, the deviations from predicted results are instructive regarding the “active ingredient” behind these effects. The key factor may be pleasant affect, rather than awe *per se*. It may be that the general conceptual broadening and fluidity that have been attributed to positive-valence affect in previous research [24] includes some expansion of the self-concept, in this case to include nature to a greater extent. This may be amplified when nature *is* the positive affect-inducing stimulus, which is consistent with the relative impacts of the awe (Cohen’s $d = 0.35$), non-awe nature ($d = 0.51$), and enthusiasm stimuli ($d = 0.30$) on INS. However, the differences among these conditions did not reach significance, and we therefore advise caution in assuming they will generalize beyond the present sample.

Although our study did not offer clear support for the proposal that NSS mediates the effects of exposure to awe-eliciting stimuli on pro-environmental policy attitudes, this does not undermine prior research relating high NSS to pro-environmental attitudes [14]. In the entire sample, leaving emotion condition out of the model, multiple regression indicated that EAI scores were predicted in the positive direction by *both* INS ($B = 0.184$, $SE = 0.031$, $p < 0.001$) and NSS ($B = 0.090$, $SE = 0.032$, $p = 0.005$). The lack of significant effect of the awe condition on NSS was quite surprising, given the extensive existing evidence on the “small self” aspect of the awe experience [17,19,20]. However, the effects of exposure to both the Awe and Non-Awe Nature conditions on NSS were directionally positive relative to the Appetitive Enthusiasm and the Neutral Control conditions, although these effects were small and neither reached significance. One limitation of the present study is that the order of INS and NSS was constant (rather than counterbalanced), with the NSS item always following the INS item. Although the significance of both nature–self variables in independently predicting EAI scores (consistent with other studies) suggests that this ordering did not drastically alter the construct measured by the NSS item, it is possible that stronger effects of emotion condition on NSS might have been observed had it been measured first. Given the substantial body of evidence showing awe produces feelings of smallness and humility, we are hesitant to firmly conclude the *absence* of the predicted NSS pathway until additional studies are conducted.

The current study had a number of strengths, as well as limitations to be addressed in future research. Regarding strengths, the study was well-powered statistically with a sample size determined through a priori power analysis. We compared effects of awe elicited by nature scenes not only against a neutral control, but also against two additional active conditions evoking other forms of pleasant affect in predicting pro-environmental attitudes. These additional conditions were chosen to represent causal factors other than awe per se that might account for aspects of the self-concept in relation to nature, and as we saw, this proved important for revealing the mechanisms of observed effects. The EAI measure not only invited participants to endorse pro-environmental values in principle, but asked them to consider plausible economic and regulatory drawbacks of formal (presumably government) policies aimed at protecting the environment. This higher bar for supporting pro-environment action could be consequential at the ballot box, as well as in nudging individual behavior.

One limitation of the present study is the purely online modality. Whereas this was necessary given the coronavirus pandemic, during which the study was conducted, it meant that we had little control over the testing environment and could not monitor participants' attention to the emotion-eliciting images. Regardless of testing environment, images on a computer screen can never evoke the intensity of awe one might experience when seeing the same scene in real life. Although they allow for a level of control not available outside the lab, future studies examining effects of awe experiences *in* nature are needed to replicate the present effects, and examine their strength in real-world contexts. Another limitation is that effects on INS, NSS, and EAI scores were only examined right after exposure to the affect-inducing stimuli. Thus, the study cannot address longer-term effects of awe (or other pleasant emotion states) on conceptualizations of the nature–self relationship, or on pro-environmental policy attitudes. Indeed, given the somewhat fleeting nature of most emotion effects, it is unlikely that a single experience of this kind would have lasting impact. A more plausible proposal is that *repeated* experiences of this kind might lead to more substantial, lingering modulation of the self-concept in relation to nature. A longitudinal experimental design would capture such effects, and might also help tease apart effects driven by pleasant affect versus awe per se. Finally, although the internal validity of our findings is strong due to the experimental design, the sample was limited to participants currently residing in the United States, and therefore caution is needed in generalizing to other cultural, political, and environmental contexts.

5. Conclusions

Pro-environmental attitudes are associated with greater pro-environmental intentions and behaviors, and thus their antecedents are important to understand. The present study investigated the impact of awe-inspiring images of nature on ways in which relationship with nature is represented in the self-concept, and in turn on pro-environmental policy attitudes. In mediation analyses, awe-evoking nature images led to increased including of nature in the self, which predicted more eco-centric (rather than anthropocentric) environmental policy attitudes. However, images of less awe-inspiring nature scenes as well as tasty foods produced the same effect, suggesting that pleasant affect was the key active ingredient. Future research may benefit from using real-life awe manipulations, repeated awe experiences, and longitudinal designs to see if effects of awe can be teased apart from those of pleasant affect more generally.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Anonymized data and lavaan mediation model output can be found at: https://osf.io/hbavq/?view_only=60e036ab49864feeb3abeac75af8211e (accessed on 17 July 2021).

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