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Awe's effects on generosity and helping

Claire Prade* and Vassilis Saroglou

Department of Psychology, Université catholique de Louvain, Louvain-la-Neuve, Belgium

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It is unclear whether positive emotionality in general, or some specific positive emotions (e.g. other-oriented ones), but not others (e.g. self-oriented and, possibly, stimulus-oriented ones), enhance prosocial thoughts, dispositions, and behavior. We focus here on awe and argue that, although being primarily stimulus-oriented and not necessarily social in its very nature, awe should enhance prosociality for several theoretical reasons. In replicating and extending previous initial research, we found in two online experiments that the induction of awe (video clip or recall), compared to the induction of amusement or a neutral condition, leads to increased prosocial behavioral intentions of generosity (spontaneous sharing of hypothetical gains) and help of a person in need – in hypothetical everyday life situations. Awe's effect on prosociality was independent from participants' religiosity (in both experiments) but seemed to be clearer for those in need of such affective stimulation, i.e. less agreeable participants (Experiment 2).

Keywords: positive emotions; prosocial behavior; awe; agreeableness

Past research has generally concluded that positive affect and positive emotionality can increase social bonds and prosociality (Carlson, Charlin, & Miller, 1988; Dillard, Schiavone, & Brown, 2008). This is meaningful since positivity in affect may result in approach motivation (Harmon-Jones, Price, Gable, & Peterson, 2014) and the successful handling of possibly threatening information (Das & Fennis, 2008). However, it remains unclear whether this applies consistently to positive emotionality and to all kinds of positive emotions, or whether some emotions may be better candidates than others to elicit prosocial thoughts, tendencies, and behaviors. Ironically, positive affect may even undermine, at least to some extent, moral and prosocial tendencies. For instance, it has been found that pride can attenuate specific affiliative behaviors such as nonconscious mimicry (Dickens & DeSteno, 2014); positive affect may increase moral disengagement and dishonesty (Vincent, Emich, & Goncalo, 2013); and simply recalling a positive sexual experience can decrease honesty (Rigo, Uzarevic, & Saroglou, in press). Such 'immoral' consequences of positive emotionality have been interpreted as resulting from the cognitive flexibility to reframe and rationalize dishonest acts (Vincent et al., 2013) or some release of self-control and the 'moral muscle' (Rigo et al., in press).

In this context, it is easy to take for granted that positive emotions that are other-oriented rather than self-oriented are reasonably good, in fact the best, candidates

to boost moral tendencies and enhance prosociality. For instance, empathy and compassion are both theoretically and empirically prototypical positive other-oriented emotions that influence helping, caring, and generosity as they obviously arouse a positive disposition toward others' needs (Batson, 2010; Stellar & Keltner, 2014). More recently, gratitude and elevation too have received significant interest from researchers: these emotions can enhance prosociality by eliciting motives for reciprocity in care and social worth and the propensity for moral self-transcendence toward higher objectives (Algoe & Haidt, 2009; Ellithorpe, Ewoldsen, & Oliver, 2015; Freeman, Aquino, & McFerran, 2009; Grant & Gino, 2010; Schnall, Roper, & Fessler, 2010). Similarly, though in a less obvious way, it is reasonable to consider self-oriented positive emotions to be rather unrelated to prosocial dispositions (see Shiota, Keltner, & John, 2006, for joy, contentment, and pride).

What are the implications, with regard to prosociality, of positive emotions that are stimulus-oriented? Do they facilitate other-oriented tendencies or do they accentuate some abolishment of the self-other distinction since they imply concentration on something else, i.e. a stimulus external to the self?

In the present work, we address this issue by focusing on a very specific stimulus-oriented positive emotion, i.e. awe. Awe is defined as the positive emotional response to stimuli characterized by vastness, which

*Corresponding author. Email: Claire.Prade@uclouvain.be

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induces a need for accommodation (Keltner & Haidt, 2003). It implies a fascination for the vast stimuli, as well as some kind of respect/reverence or fear of it. Thus, awe's typical elicitors appear to be panoramic views, landscapes, sunsets, or music, and art (Shiota et al., 2007). Moreover, awe is primarily a stimulus-oriented emotion to such an important degree that it is not *à priori*, strictly speaking, a social emotion. The above-mentioned typical elicitors of awe are targets of attention and fascination that are inherently impersonal; they most often do not need, and may even exclude, the presence of other persons.

We argue here that although primarily stimulus- and not other-oriented, awe may also be a facilitator of prosocial thoughts, feelings, and behavior. This argument is based on several theoretical reasons.

First, the fascination with the external stimulus is so strong in intensity and thus so 'absorbing' that, in the awe experience, the self can be considered as being put in parenthesis and in a secondary place. Therefore, following awe, personal concerns and self-interests may diminish. Second, and in line with the first, fascination with the specific content of the awe's prototypical elicitors, i.e. nature, art, or childbirth, may dissuade individuals from being too preoccupied with materialistic concerns and immediate individualistic objectives (see Rudd, Vohs, & Aaker, 2012; Experiment 3) and may help people adopt a broader existential approach of life. These factors should increase cognitive 'space' and the propensity for thinking about and taking into account others' needs, problems, and desires. Third, as proposed by Rudd et al. (2012), awe broadens time perception and, in particular, decreases impatience. This could be another underlying mechanism of the awe-prosociality link given that thinking of and investing in others' needs and interests presupposes personal availability. Finally, the vastness of nature, the beauty of an artistic work, or the fascination of childbirth may activate a notion of transcendence, i.e. the idea that all beings are interconnected within a universe marked by benevolent intentions, which in turn may foster gratitude and thus positive orientation toward other people. Note that awe, though strictly speaking is a secular emotion (Caldwell-Harris, Wilson, LoTempio, & Beit-Hallahmi, 2010), has repetitively been found to amplify spiritual inclinations (Saroglou, Buxant, & Tilquin, 2008) and belief in a supernatural agent (Valdesolo & Graham, 2014), in particular among spiritual people (Van Cappellen & Saroglou, 2012).

We thus expected the experience of awe, even a brief experimental induction of it, to enhance prosociality, more specifically prosocial behavioral intentions that may possibly even be spontaneous. Note that this is a stronger expectation than simply hypothesizing that awe increases self-reported prosocial thoughts, feelings, and

dispositions. Behavioral prosocial intentions, in particular those that are expressed spontaneously while the subject is unaware of what construct is being measured, are much less explicit indicators of prosocial orientations. Moreover, to guarantee that the effect can generalize to prosociality in general, and is not limited to one very particular kind of prosocial behavior, we conducted two experiments. Both experiments were online. In Experiment 1, we investigated the effect of awe on spontaneous generosity, i.e. spontaneously sharing hypothetical gains with others; and, in Experiment 2, we looked at awe's effect on helpful intentions as a reaction to hypothetical scenarios that force people to choose to act prosocially or not in everyday scenarios. Finally, in order to confirm that the hypothesized effects are attributable specifically to awe and not to positive emotionality in general, we included in both experiments, in addition to a neutral, no emotional induction condition, a comparison condition of amusement. An additional advantage of selecting amusement for the purpose of the present work is that this emotion, like awe, can be considered stimulus-oriented rather than either other- or self-oriented (Martin, 2006).

Of importance to note is that two recent studies provided initial evidence – some coming from work carried out in parallel with our research – in favor of the causal awe-prosociality link. However, this evidence seems limited, not unambiguous, and not fully converging. We aim to replicate and extend, in prosocial aspects and measures, participants' culture, and possible moderators, and methodologically strengthen this evidence through the use of non-explicit measures and comparison conditions, thus correcting for previous potential pitfalls. In a first study in the US, Rudd et al. (2012, Experiment 2) found that awe enhances willingness to volunteer one's time, but not money, to 'a worthy cause' and 'charity'. However, the latter two were measured through explicit, direct, and abstract questions rather than subtle, indirect, and situation-specific questions. Another limitation of that study was the non-inclusion of a neutral condition, making it unclear whether it was (a) awe that increased prosociality or (b) happiness/joy – the comparison condition – that decreased it. In a second study, also with US participants, Joye and Bolderdijk (2015) found that exposure to awesome, but not mundane, nature increases prosocial choices – measured through social value orientation – but not willingness to donate objects, money, and blood.¹

Of interest to note is that the present work also aimed to cross-culturally extend to a significantly secularized European context (Belgium) previous research on awe and prosociality that was carried out exclusively in the US. This constitutes a critical test of the awe-prosociality hypothesis, since it can reasonably be argued that, in more religious contexts, awe is more often associated

with religion/spirituality (see Prade, Rodriguez, & Saroglou, 2012; for the religiosity–dispositional awe links), the latter being known to implicitly activate (ingroup) prosociality (Saroglou, 2013).

Finally, the present work extends previous research by asking a new question on the role of individual differences as possible moderators of awe's effect on prosociality. Some previous research indicates, for instance, that the effect of nature's beauty on prosociality is greater for people who have a corresponding personal tendency to easily perceive natural beauty (Zhang et al., 2014); and awe's effect on increased feelings of oneness with others is clearer for spiritual people (Van Cappellen & Saroglou, 2012). We thus tested whether awe's effect of prosocial inclinations would be moderated by participants' religious attitudes and by two relevant personality traits, i.e. agreeableness and openness to experience.

Experiment 1

Method

Participants

A total of 146 young adults participated in an online study published in a series of Facebook Universities groups. In order to avoid response bias, 19 participants who specified having already participated in a similar kind of study (from our lab) were excluded. This left 127 participants (age: $M = 21.43$; $SD = 4.90$, 106 women), of whom, 87% were from France, 10% from other European countries and 2% from Africa (one participant did not mention nationality). Twenty-one percent of participants self-identified as Catholic, 9% mentioned other religious affiliations (Buddhism, Muslim, Protestantism, or simply 'spiritual'), 46% were atheist, 18% agnostic, and 6% did not answer.

Procedure and materials

The study was advertised as being focused on 'individual reactions to real or fictional situations'. Data were collected in early 2014. Participants were randomly assigned to one of three conditions: awe ($n = 43$), amusement ($n = 37$), and neutral ($n = 47$). In the awe condition, participants read the following instructions:

We would like you to remember a particular event during which you were in the presence of a stunning natural landscape. This might have been a sunset, a prestigious view, or any other moment when, in nature, you felt awe. (adapted from Shiota et al., 2007)

In the amusement condition, the instructions were as follows: 'We would like you to remember a particular event during which you laughed with friends. This might have been due to a joke or any funny situation in which you

felt amusement'. In the neutral condition, the instructions were: 'We would like you to remember the last time you went grocery shopping'. In all conditions, the three instructions ended with the following sentence: 'Try now, for a few moments, to immerse yourself in the event again. Describe now in three to five lines the [awe you felt; amusement you felt; path taken to reach the store]'.

To check the affects elicited by the recall exercise, participants were asked afterward to indicate, using a slider from 1 (very slightly or not at all) to 5 (extremely), how much they felt 10 affective states, randomly ordered across participants: *awe, fascination, curiosity, sadness, amusement, excitement, joy, enthusiasm, pride, and determination*. Prosociality, more precisely spontaneous generosity, was assessed afterward with a semi-open question in which participants were asked to write down what they would do if they won 100,000 euros in a lottery game. Participants were asked to specify the percentage of money they would allocate for each expenditure, and to briefly describe them. The percentage of money spontaneously allocated to others (family, friends, and/or charity) was coded as a measure of prosociality. This measure of prosociality can be considered implicit since participants are unaware of what the underlying construct to be measured is. This technique has been successfully used in previous research, and is meaningfully related to constructs like compassion (Clobert, Saroglou, & Hwang, 2015; Experiment 2), universalistic values (Clobert & Saroglou, 2013), and low prejudice (Clobert, Saroglou, Hwang, & Soong, 2014, Study 3).

After a distracting task in which participants were asked to search for 10 hidden neutral words in a grid of letters, we administered the Ten Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003) and a three-item index of religiosity (importance of God and religion in life; frequency of prayer).²

Results and discussion

Means and standard deviations of affective states by condition are reported in Table 1. Awe elicited stronger feelings of awe, fascination, and pride compared to the amusement and neutral conditions (all $ps < .05$). In the amusement condition, participants experienced stronger feelings of amusement than in the awe and neutral conditions (all $ps < .05$). In the two positive emotions conditions, i.e. awe and amusement, participants experienced stronger feelings of joy, excitement, and enthusiasm than in the neutral condition (all $ps < .05$).

To compute the spontaneous generosity of hypothetical gains two judges who were blind to the conditions coded the hypothetical expenditures of the first 20 respondents as 'prosocial' or 'not-prosocial'. The inter-coder agreement was high ($\kappa = .83$). Therefore, one of the two

Table 1. Means and standard deviations of affective states by condition.

Affect. States	Experiment 1			Experiment 2		
	Awe <i>M</i> (SD)	Amusement <i>M</i> (SD)	Neutral <i>M</i> (SD)	Awe <i>M</i> (SD)	Amusement <i>M</i> (SD)	Neutral <i>M</i> (SD)
Awe	4.59 (.60)	2.63 (1.28)	1.93 (1.06)	3.78 (1.03)	1.81 (.93)	2.07 (1.08)
Fascination	4.46 (.64)	2.55 (1.26)	1.81 (1.07)	3.63 (1.08)	2.08 (1.01)	2.26 (1.19)
Pride	3.17 (1.34)	2.45 (1.27)	1.94 (1.03)	2.01 (1.10)	1.42 (.75)	1.46 (.85)
Curiosity	3.49 (1.34)	2.59 (1.27)	3.09 (1.11)	3.31 (1.05)	2.84 (1.14)	3.21 (1.25)
Sadness	1.52 (.98)	1.18 (.51)	1.59 (.92)	1.97 (1.16)	1.31 (.76)	1.45 (.83)
Amusement	2.73 (1.33)	4.66 (.48)	2.45 (1.25)	1.78 (.93)	3.55 (1.11)	2.09 (1.07)
Joy	4.54 (.61)	4.30 (.73)	2.66 (1.08)	2.73 (1.01)	2.74 (1.14)	2.07 (.96)
Excitement	3.77 (1.12)	3.60 (1.17)	2.03 (1.05)	2.25 (1.14)	2.10 (1.02)	1.50 (.77)
Enthusiasm	4.08 (.74)	3.96 (1.01)	2.60 (1.20)	2.61 (1.11)	2.69 (1.17)	2.02 (1.01)
Determination	2.93 (1.21)	2.59 (1.14)	3.67 (1.04)	2.11 (.95)	1.40 (.66)	1.49 (.85)

judges continued to code the responses of the remainder of the sample. The means of the percentage of money allocated to others were 41.49 (SD = 24.94), 36.86 (24.31), and 28.34 (22.84), respectively for participants in the awe, amusement, and neutral conditions (see also Figure 1). The ANOVA analysis showed that the difference between conditions was significant, $F(2,124) = 3.49$, $p = .03$, $\eta^2 = .05$, and independent-sample t -test analyses revealed that participants were spontaneously prone to spend more money for others in the awe than in the neutral condition, $t(88) = 2.61$, $p = .01$, $\eta^2 = .05$, CI [-23.16, -3.14]. The difference between the amusement and the neutral conditions was not significant, $t(82) = 1.62$, $p = .11$. Finally, neither the five personality traits nor religiosity moderated the main effect of condition on prosociality.

Results of Experiment 1 thus confirmed the main hypothesis. The experience of awe, even when briefly induced in an online experiment, enhanced prosociality. More specifically, it enhanced generosity, at least in terms of the tendency to share hypothetical gains with others rather than keeping them for oneself. Importantly, this result was based on an implicit behavioral measure

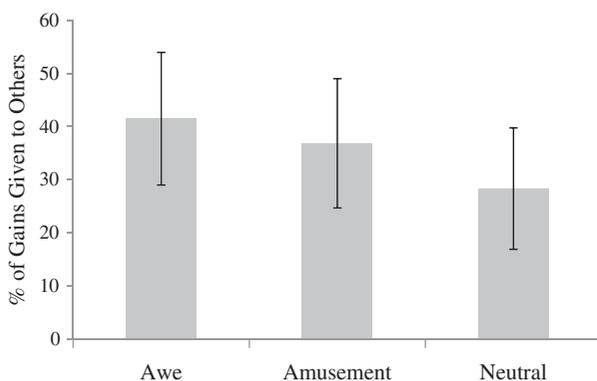


Figure 1. Effect of condition on generosity, measured as the percentage of hypothetical gains (lottery money) spontaneously given to others (Experiment 1).

of spontaneous prosocial intentions and not on an explicit self-evaluative measure of prosociality, which could have potentially inflated people's propensity to appear nice after the induction of awe. Moreover, the effect was specific to awe, and did not extend to positive emotionality in general, here measured in terms of amusement. The finding is in line with, strengthens methodologically, and extends conceptually and cross-culturally, previous research on awe's prosocial outcomes (Joye & Bolderdijk, 2015; Rudd et al., 2012). Finally, neither personality nor religiosity moderated awe's effect on prosociality. Experiment 2 aimed to replicate the main effect using a different prosocial outcome, i.e. the willingness to help persons in need, across various situations, as well as to again investigate the role of the same potential moderators.

Experiment 2

Method

Participants

A total of 194 students participated in an online study published on Facebook. In order to avoid response bias, 24 participants who, at the end of the study, reported having participated in a similar kind of study in our lab were excluded. This left 170 participants (age: $M = 21.08$; $SD = 4.01$, 133 women), with 82% from France, 11% from Belgium, and 5% from other countries (two participants did not mention nationality). Twenty-eight percent self-identified as Catholic, 8% as Muslim, 7% mentioned other religious affiliations (Protestantism, Buddhism, or simply 'spiritual'), 54% reported having no religion (38% atheists, 15% agnostics), and 3% did not answer.

Procedure and materials

The study was advertised as focusing on 'reactions to daily life events'. Data were collected in early 2014.

Participants were randomly assigned by the server to one of three conditions: awe ($n = 63$), amusement ($n = 52$), and neutral ($n = 55$). They were asked to watch a 3-min video clip depicting (1) a series of beautiful landscapes (awe condition), (2) a well-known humorist imitating an old man trying to understand the menu in a fast food restaurant (amusement condition), or (3) a video-clip about beer brewing (neutral condition; video clips taken from Saroglou et al., 2008). To check for the specific affective states elicited by the video clips, participants completed the questions on the affective states as in Experiment 1.

To measure prosociality, participants were provided with nine hypothetical everyday life interpersonal situations (taken from Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005, Study 2). The nine situations were described in a short paragraph. In five of them, a protagonist was in need (e.g. asked for help with homework, asked for help during exams). The other four were distracting situations, irrelevant to helping, and served to de-emphasize prosociality as the construct being measured, and thus diminish the risk of social desirability in the answers. For each situation, participants were asked to write two lines regarding how they would react if they were faced with these situations. Two judges who were blind to the conditions coded the answers as prosocial (coded as 1) or not (coded as 0). Inter-coder agreement was satisfactory for the five interpersonal situations assessing prosociality ($.71 < \kappa < .97$). Scores of the five situations were summed to obtain a global prosociality score ranging from zero to five. Afterward, the mean of the two scores (two judges) of prosociality was computed. Post-experimentally, personality and religiosity were assessed after a distracting task as in Experiment 1.

Results and discussion

Means and standard deviations of affective states by condition (manipulation check) are reported in Table 1. GLM analyses confirmed that the awe condition elicited stronger feelings of awe, fascination, pride, and sadness compared to the amusement and neutral conditions (all $ps < .05$). Participants experienced stronger feelings of amusement in the amusement condition than in the awe and neutral conditions; and participants in the two positive emotions conditions, i.e. awe and amusement, experienced stronger feelings of joy, excitement, and enthusiasm than participants in the neutral condition (all $ps < .05$).

Means of willingness to help for participants in the awe, amusement, and neutral conditions were, respectively, 3.18 (SD = 0.96), 2.93 (1.09), and 2.69 (1.12) (see also Figure 2). GLM analysis showed a significant effect of condition, $F(2, 159) = 3.10$, $p = .048$, $\eta^2 = .04$,

and independent sample t -tests revealed that participants in the awe condition were willing to help more often than participants in the neutral condition, $t(111) = 2.53$, $p = .01$, $\eta^2 = .04$, 95% CI [.11, .88]. Helping did not differ between the amusement and the neutral conditions, $t(100) = 1.15$, $p = .25$.

Five multiple regression analyses were conducted, one for each of the Big Five personality traits, to test whether the effect of awe on prosociality was moderated by personality. In each regression, we entered as predictors (1) the contrast between awe and the other two conditions, (2) the contrast between amusement and the other two conditions, (3) the given personality trait, and (4) the two interactions between the given trait and the two contrasts. It turned out that agreeableness, in addition to its own effect ($b^* = .25$, $p = .033$) as well as that of the awe-based contrast ($b^* = .86$, $p = .008$), had a moderating effect on the link between condition and prosociality, $b^* = -.64$, $p = .046$, $F(5, 155) = 2.60$, $p = .03$, $R^2 = .08$. Simple slope analysis (see Figure 3) revealed that the effect of awe on increased prosociality was specific to people low in agreeableness, $b^* = .45$, $p < .001$, whereas highly agreeable people were no more prosocial in the awe condition than the other conditions, $b^* = .06$, $p = .64$. Religiosity, in a similar regression analysis, and the other four personality traits did not moderate awe's effect on prosociality.

Experiment 2 importantly replicated and extended the findings of Experiment 1 regarding generosity with an alternative form of prosociality, i.e. the willingness to help a person in need. It is important to highlight again the non-explicit character of the measure since (a) the task was presented as an investigation of coping styles, not prosociality, and (b) the scenarios potentially leading to prosocial choices were hidden among other scenarios that were irrelevant with regard to possible prosocial actions. Moreover, in this experiment, agreeableness was found to be a significant moderator of the main effect,

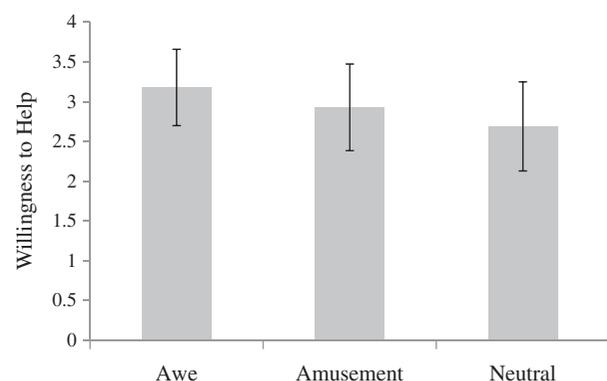


Figure 2. Effect of condition on the willingness to help unknown persons in need across five situations (Experiment 2).

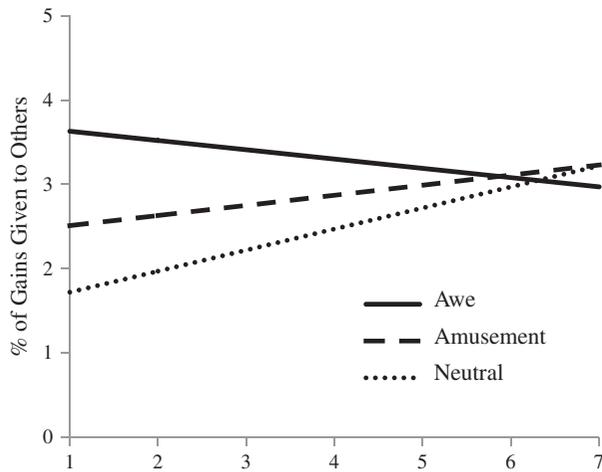


Figure 3. Prosociality as a function of agreeableness, distinctly by condition (Experiment 2).

with awe being particularly efficient at increasing prosocial intentions among people low in agreeableness. This may result from a need for emotional stimulation among those low in agreeableness before acting prosocially and/or by some ceiling effect for those high in agreeableness. In fact, people who highly appreciate the beauty of nature also tend to be high in agreeableness (Zhang et al., 2014).

General discussion

Across two experiments using different methods of emotional induction and different forms of prosociality, awe, as hypothesized, was found to increase participants' spontaneous generosity (Experiment 1) and willingness to help a person in need (Experiment 2). In both experiments, implicit measures of behavioral prosocial intentions and not self-reported evaluations of prosociality were used.

These findings importantly replicate, extend, and strengthen methodologically, conceptually, and cross-culturally, initial previous work (Joye & Bolderdijk, 2015; Rudd et al., 2012; Experiment 2; see also Piff et al., 2015, for work published during the review period of the present paper). Because these previous studies were all carried out in the US, our cross-cultural extension of the evidence on the awe–prosociality causal link is critical here. In contexts of high mean religiosity, awe is often perceived as a quasi-religious/spiritual emotion, and thus the prosocial effects of awe may be facilitated by an implicit religion–prosociality association. However, the present work shows that the effects hold in highly secular contexts too (Belgium, one of the most secular European countries), and in a sample composed mostly of nonbelievers.

This work advances our understanding of the prosocial outcomes of positive emotions. First, though not counterintuitive, the present findings are interesting since awe, strictly speaking, is, in our understanding, neither an other- nor a self-oriented emotion. Indeed, awe is a stimulus-oriented emotion (Keltner & Haidt, 2003); and vast nature, a predominant elicitor of awe, does not typically involve the presence of and/or interest on others. Thus, awe differs from other-oriented positive emotions, like admiration, empathy, elevation, or gratitude that more obviously and directly enhance prosocial beliefs, affects, and actions (Algoe & Haidt, 2009; Ellithorpe et al., 2015; Freeman et al., 2009; Grant & Gino, 2010; Schnall et al., 2010; Stellar & Keltner, 2014). Future research should investigate the specific psychological mechanisms that explain the prosocial outcomes of awe. In the introduction, we proposed several possible mechanisms: a decrease of materialistic concerns in favor of a more encompassing existential attitude; self-diminishment in favor of admiration of the world as a whole (see Piff et al., 2015); feelings of transcendence and interconnectedness between all beings, and then gratitude; and, as suggested by Rudd et al. (2012), an increase of time perception, thus patience in welcoming others' needs in one's mind.

Second, increasing research confirms the idea that positive emotions should be perceived as discrete, each having its own elicitors, action tendencies, and subsequent cognitive and behavioral outcomes (Tong, 2015; Tugade, Shiota, & Kirby, 2014). Thus, in line with broader previous research suggesting that the moral and existential consequences of awe are specific to this emotion and may not extend to other positive emotions, in particular to self-focused ones, like pride (Piff et al., 2015; Study 2; Rudd et al., 2012; Experiment 2), or other stimulus-oriented emotions, like amusement (Piff et al., 2015; Study 3; Saroglou et al., 2008; Valdesolo & Graham, 2014; Van Cappellen & Saroglou, 2012), in the present work, it was awe but not amusement that provoked prosocial effects.

It would be interesting to comment more on the similarities and differences between awe and amusement. As our findings indicate, amusement was in both studies 'in the middle', between awe and the neutral conditions, as far as prosocial effects are concerned. The two emotions share general positive emotionality, which in principle can stimulate prosociality to some extent. Moreover, both awe (Keltner & Haidt, 2003) and amusement (Martin, 2006) are induced by external stimuli to which individuals react by revisiting their ordinary way of understanding. Finally, awe and amusement seem to occur in situations that are problem-free and relaxing (Tong, 2015).

However, in both present studies, only awe clearly enhanced prosocial behavioral inclinations, suggesting

that simple positive emotionality and/or relaxed reconsideration of stimuli external to the self may not be sufficient to consistently enhance prosociality. Awe, thus may have a stronger impact on prosociality, possibly first due to the very nature of awe-inspiring stimuli, which are very specific (vastness: Keltner & Haidt, 2003; impersonal forces rather than actions of others or of the self: Tong, 2015) compared to amusement where any kind of object/event may be a stimulus. Second, the reaction of reconsidering reality through a new understanding is different in tone for the two emotions. With awe, the world appears to be much more important and admirable than in the everyday life (Shiota et al., 2007); with amusement, things seem diminished and appear to be less important than an individual would ordinarily perceive them to be (Saroglou & Anciaux, 2004; Wyer & Collins, 1992).

The current work also investigated, for the first time to our knowledge, the possible moderating role of individual differences (religiosity and personality) on awe's effects on prosociality. Religiosity did not moderate awe's effects on prosociality in either of the two experiments. However, based on previous research indicating affinities of religion/spirituality with both awe (Saroglou et al., 2008; Valdesolo & Graham, 2014; Van Cappellen & Saroglou, 2012) and prosocial behavior (Preston, Ritter, & Hernandez, 2010; Saroglou, 2013), such moderation cannot be excluded from the realm of possibility, especially if the sample size in a future study is particularly large. Nevertheless, it may also be that nonbelievers equally benefit from awe's force to mobilize other-oriented thoughts, motives, and actions. Awe, strictly speaking, is not a religious emotion and can also be fully experienced by nonbelievers (Caldwell-Harris et al., 2010).

Evidence was provided that personality can moderate, to some extent, awe's prosocial effects. Indeed, whereas in Experiment 1 awe's effect on generosity was independent from participants' agreeableness, in Experiment 2, the effect was present mainly among those low in agreeableness. Of course, this finding has to be replicated in future studies before being considered as solid and definite. Nevertheless, it may indicate some interesting implications for psychological and clinical practice. For people who are dispositionally low in agreeableness, awe may be a specific self-transcendent, stimulus-oriented, positive emotion that stimulates them and facilitates prosocial behavior, possibly due to the activation of a life perspective that is less materialistic (Rudd et al., 2012) and more inclusive of others (Shiota et al., 2007; Van Cappellen & Saroglou, 2012). Thus, people low in agreeableness may exhibit, thanks to awe, prosocial behavior at similar levels to those high in agreeableness, who may need less of the emotion of awe to express their personal prosocial dispositions.

An interesting question for future research is whether awe enhances only ingroup prosociality or it also has a

particularly enhancing effect on extended, possibly universalistic, prosociality. In the current work, it was unclear whether the targets of generosity or willingness to help, in, respectively, Experiments 1 and 2, were solely ingroup members. Nevertheless, given its dimension of vastness, it seems reasonable to hypothesize that the emotion of awe specifically, or more typically, compared to other positive self-transcendent emotions like gratitude or elevation, should enhance universalistic values, attenuation of ingroup/outgroup barriers, and subsequent universalistic prosocial behavior.

In sum, the present work constitutes an additional contribution to the ongoing research on discrete positive emotions and their social effects. Awe, but not (or much clearer than) amusement, enhances prosocial behavior, and does so independently of participants' religiosity; it also enhances prosociality particularly among those who need some emotional stimulation, i.e. those low in agreeableness. This work also contributes conceptually and empirically to our understanding of the context \times person interaction in explaining prosocial behavior. Finally, it extends our knowledge on the social consequences of the emotion of awe, which is of particular interest for professionals across a large number of domains varying from moral education, clinical practice, negotiation, and conflict resolution, to ecological and humanitarian tourism.

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Notes

1. Zhang, Piff, Iyer, Koleva, and Keltner (2014) also found evidence in the US that exposure to subjectively more, compared to less, beautiful nature stimuli increases generosity (dictator task), trust (trust game), and helping behavior. All three effects were mediated by higher positive emotions. This mediation, together with the absence of a neutral – no emotion – condition, suggests that prosociality was simply higher when positive emotionality was stronger, but does not provide us with specific information about awe. Finally, during the evaluation of the first version of the present manuscript, new work with multiple studies, again in the US, was published, showing that the induction of awe increases prosocial attitudes and behavior, partly because of self-diminishment (Piff, Dietze, Feinberg, Stancato, & Keltner, 2015).

2. Universalistic values (Schwartz, 1992) and the resource dilemma (Sheldon & McGregor, 2000) were also included at the end of the experiment, but neither were affected by the condition nor affected post-experimental measures.

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