

The interactive effects of emotions and numerical information in increasing consumer support to conservation efforts

Felix Septianto

University of Auckland

Joya A.Kemper

University of Auckland

Tung MoiChiew

Universiti Malaysia Sabah

This is an Accepted Manuscript of an article published by Science Direct in the Journal of Business Research on **29 February 2020**, available online:
<https://www.sciencedirect.com/science/article/abs/pii/S0148296320301181>

Cite as : Septianto, F., Kemper, J. A., & Chiew, T. M. (2020). The interactive effects of emotions and numerical information in increasing consumer support to conservation efforts. *Journal of Business Research*, 110, 445-455.

Abstract

Nearly 50% of all Earth's forests have been cleared and considering forests hold 80% of the world's diversity, it is crucial to support efforts by non-profit organizations (NPO) and government to stop deforestation. Yet, NPOs combat in an increasingly competitive donation sphere, with only 3% of donations going to conservation and animal welfare NPO's. The present research aims to develop a novel perspective to increase consumer support (financial and time resources) to NPOs by examining the use of emotion (hope vs. fear) and numerical information (range vs. point value). Across three experimental studies, we provide concrete empirical evidence that hope increases the effectiveness of numerical information specified as a point value format, whereas fear will increase the effectiveness of numerical information specified as a range format. Our results provide practical implications for conservation NPO marketers in terms of matching emotion and numerical format.

1. Introduction

Agriculture, drilling, and mining have destroyed vast amounts of forests, home to 80% of the world's terrestrial biodiversity (i.e., plants, animals, fungi and bacteria) (WWF, 2019b). The clearing of forests has not only an impact on biodiversity but also greenhouse gas emissions, disruption of water cycles, soil erosion and displacement of people (WWF, 2019a). It is estimated that we have lost 46% of global tree numbers since human civilization began (Crowther et al., 2015). Non-profit organizations (NPOs) are working with industries and consumers to promote sustainable use of forests. However, these NPOs need funding to put in place such practices, like conservation projects, education (Straughan, 2008) and coordinating interests among businesses, governments, and communities (Fishman, Oliveira, & Gamble, 2017).

However, with decreasing government budgets, NPOs can no longer rely only on government funding. Thus, donations are becoming increasingly important. In fact, environmental NPOs in the U.S. receive approximately 50% of their revenue from donations (Straughan, 2008). NPOs' reliance on donations means they are increasingly concerned with attracting increased but also sustainable funding. However, scant research has examined how to effectively frame donor advertisements in the context of species conservation or biodiversity NPOs. This is a significant oversight, as according to the latest report, contributions to environmental and animal welfare NPOs make up only 3% of all charitable donations (Giving, 2018).

The present research aims to address the significant issue of species conservation and biodiversity and extend the charitable donation knowledge to NPOs that focus on these issues. Donation appeals commonly utilize statistical information to emphasize the gain (loss) of donating (not donating) (Chang & Lee, 2010). Yet, there is a lack of research on how this statistical information should be formatted (Chang and Lee, 2010, Das et al., 2008). In particular, we focus on the distinction between a precise format (e.g., save X number of species of biodiversity) versus a range format (e.g., save X to Y number of species of biodiversity). This is significant because that numerical information format might lead to differential consumer inferences about a product (Hsee et al., 2009, Lembregts and Pandelaere, 2018, Pena-Marín and Bhargava, 2016). Moreover, while a precise format has been widely used in both for-profit and non-profit settings, it seems that a range format is more common in for-profit contexts (e.g., sales promotions, product price) (Ames and Mason, 2015, Biswas and Burton, 1993, Fan et al., 2018, Lembregts and Pandelaere, 2018).

In addition to numerical information, employing emotional appeals is one of the most common strategies for NPOs to raise support for their cause. Indeed, donor appeals usually evoke more negative emotions such as sadness (Small & Verrochi, 2009) and guilt (Hibbert, Smith, Davies, & Ireland, 2007). However, there is an emerging literature examining the role of positive emotions in this regard (Cavanaugh et al., 2015, Septianto et al., 2018). For example, research found that moral elevation increased donations to a Black-oriented charity (Freeman, Aquino, & McFerran, 2009), that positive emotions (i.e., love, hope, pride, and compassion) all influence prosocial behavior toward close entities, but only love encourages prosocial behavior toward distant others and international organizations (Cavanaugh et al., 2015), and that positive emotional appeals elicit more favorable attitudes toward the charity advertisement and toward the charity organization, while negative appeals are at least equally effective as positive appeals or more effective in the case of eliciting actual donations (Erlandsson, Nilsson, & Västfjäll, 2018).

In the context of our research, when thinking about environmental damage and efforts to tackle such issues, two distinct emotions – hope and fear – potentially have significant impacts (Smith & Leiserowitz, 2014). Hope is a positive emotion emerging in the presence of future, yet uncertain favorable outcomes (Smith and Ellsworth, 1985, Winterich and Haws, 2011); in contrast, fear is a negative emotion arising in the presence of potential loss and danger (Lerner and Keltner, 2001, Smith and Ellsworth, 1985).

Drawing upon psychological research examining emotion effects (Lerner and Keltner, 2001, Winterich and Haws, 2011) and extant literature on numerical information and their impacts on consumer decision making (Hsee et al., 2009, Lembregts and Pandelaere, 2018), we seek to propose a novel perspective of ways for NPOs to develop effective communication strategies incorporating specific emotional appeals and numerical information format. In particular, when numerical information is presented in a more precise format (i.e., point values vs. ranges), consumers would infer a greater magnitude of benefit (Lembregts & Pandelaere, 2018) because a more precise format signals less ambiguity (Lembregts and Pandelaere, 2018, Rothschild et al., 2011, Welsh et al., 2011). Furthermore, while hope and fear are associated with the appraisal of uncertainty or ambiguity (Smith and Ellsworth, 1985, Winterich and Haws, 2011), hope arguably leads to a more optimistic view of ambiguity than fear.

Building on these findings, we predict a ‘match-up’ between emotions and numerical format such that hope will increase the effectiveness of numerical information specified as a range format, whereas fear will increase the effectiveness of numerical information specified as a point value format. We argue this because ambiguity amplifies experiences, whether positive or negative (Bar-Anan, Wilson, & Gilbert, 2009). Consequently, fearful consumers are more pessimistic (Lerner & Keltner, 2001) and feel high levels of discomfort with ambiguity. These consumers are then motivated to seek precise information to resolve that discomfort.

Conversely, hopeful consumers are more optimistic (MacInnis and De Mello, 2005, Winterich and Haws, 2011) and feel *less* discomfort with ambiguity. In fact, under conditions of high ambiguity, these consumers are more likely to imagine predominantly positive experiences (Ketelaar, van't Riet, Thorbjørnsen, & Buijzen, 2018). Consequently, when presented with a point value versus a range format, we expect hopeful consumers to prefer a range format because a less precise format allows them to imagine more favorable outcomes. Thus, we propose that the emotion effects on the effectiveness of the format of numerical information will be mediated by ‘discomfort with ambiguity.’ We argue that this ‘discomfort

with ambiguity' should then influence the perceptions regarding one's behavioral impact (i.e., perceived instrumentality; Jin and He, 2018, Sharma and Morwitz, 2016). Consequently, fearful consumers, who have high levels of discomfort for ambiguity, would perceive that their support can be instrumental when evaluating a point value format. In contrast, hopeful consumers, who have low levels of discomfort for ambiguity, would perceive that their support can be instrumental when evaluating a range format.

The present research makes three significant contributions. First, we provide concrete ways for species conservation and biodiversity NPOs to develop effective advertising strategies by combining specific emotions and numerical information format to gain support from the public. Here, we help bridge a gap in current research to investigate conservation NPO donor and advertising strategies. Second, we contribute to the literature on emotion appraisal by identifying the underlying process of how two emotions associated with the same appraisal (i.e., uncertainty or ambiguity) can lead to differential effects on consumer judgments and decisions (So et al., 2015). Finally, this research also adds to our understanding of how emotions can play a role in consumer judgments of numerical information.

2. Literature review and hypotheses

2.1. Conservation charities

The health of the natural world has major implications for all species. Conservation efforts focus on preserving the health of biodiversity and habitats, but the demands of human life threaten the very resources we depend. The use of natural resources sustainably is a key means to achieve sustainable development. The focus of conservation efforts are on the main areas of forests, soil, biodiversity, and renewable (i.e., water and minerals) and non-renewable resources (i.e., fossil fuels) (Geographic, 2019).

Deforestation ties many of these issues together as the clearing of forests has adverse effects on biodiversity, species endangerment, and soil erosion. For example, forests provide the habitats for animals and plants, stores carbon, reduces runoff (protects soil), adds nutrients to the soil (leaf litter) and provides resources for people such as lumber and firewood (Geographic, 2019). Nearly half of all the forests are located in the tropics, and while this takes up <6% of the world's land area, it contains approximately 80% of our species and is thus rich in biodiversity (Geographic, 2019). While most governments are committed to conservation efforts through laws and incentives, much work is left to national and international conservation organizations.

The International Union for the Conservation of Nature (IUCN), founded in 1948, is an alliance of governments and organizations that aims to protect wildlife and habitats and monitors the health status of the natural world (IUCN, 2019). In 1980, the IUCN enacted a world conservation strategy. Many of the organizations that are part of the IUCN require funding from donors. Yet, there is little empirical evidence showing that marketing expertise can be readily applied to the cause of preserving biodiversity. Such research is crucial as over 95% of all donations are related to religion, education, human services, health, public society benefit, and the arts, with only 3% donated to environmental and animal welfare NPOs (Giving, 2018).

Notably, while more consumers are becoming more conscious about the environmental consequences of production and consumption (Egea and de Frutos, 2013, Lee and Holden,

1999, Onel and Mukherjee, 2017), this has not translated to increased donations to conservation NPOs. Moreover, traditional marketing appeals (i.e., in hotel rooms) and social marketing campaigns on conservation are usually limited to recycling, and electricity and water savings (Goldstein et al., 2008, Steg, 2008). For example, (social) marketing appeals and consumer research on palm oil (a major contributor to deforestation) are scarce (Disdier, Marette, & Millet, 2013). Thus, a more effective means for real gains in conservation efforts may lie with increased efforts by NPOs to effect institutional as well as behavior change.

While there is little research specifically investigating how NPOs can raise consumer support to preserve biodiversity, we can draw findings from different, yet related contexts (e.g., literature on consumer prosocial behavior) to examine how to develop effective advertising strategy. In particular, research which has examined the advertising effectiveness of donation appeals have focused on largely emotional appeals, including empathy, pride, and nostalgia (Merchant et al., 2011, Septianto et al., 2018, Verhaert and Van den Poel, 2011). Other research has also examined ego versus altruistic claims (Park & Lee, 2015) in charity advertising. Specifically, self-benefit (ego) versus other-benefit (altruistic) research has demonstrated that gender (Chang & Lee, 2010), guilt (Chang, 2014), and public accountability (White & Peloza, 2009) affect consumer charitable intentions and behaviors.

Other forms of persuasion are also commonly used to demonstrate urgency and importance of the cause or issue. In this case, NPOs often present statistical information, such as how many lives will be saved (or lost) if action is taken (not taken) (Das et al., 2008). Further, it has been understood that such statistical evidence enhances the persuasiveness of the message (Chang & Lee, 2010). However, there are distinct formats in which NPOs can convey such numerical information. For instance, they can present a numerical information in a precise format (e.g., save X number of victims) or in a range format (e.g., save X to Y number of victims). Notably, while some research has shed light on the effectiveness of these different numerical formats, such studies have examined for-profit contexts (e.g., product attributes, sales promotions) (Ames and Mason, 2015, Biswas and Burton, 1993, Fan et al., 2018, Lembregts and Pandelaere, 2018). Hence, it is less clear how a precise or a range format can be beneficial for NPOs and under what conditions one format can be more effective than the other one.

The present research thus seeks to extend our understanding of consumer charitable behavior and increase support to conservation NPOs by building on psychological research examining emotion effects (Lerner and Keltner, 2001, Winterich and Haws, 2011) and numerical information (Hsee et al., 2009, Lembregts and Pandelaere, 2018) in conjunction (a match-up effect) to enhance the donation appeal.

2.2. The appraisal approach of discrete emotions

While there are different lenses through which we can examine emotion effects on consumer judgments and decisions, we develop this research using the Appraisal Tendency Framework (ATF; Han et al., 2007, Lerner and Keltner, 2001). According to this framework, each emotion is characterized by two or three key appraisal dimensions that influence its downstream influences on judgments and decisions (Han et al., 2007, Lerner and Keltner, 2001). Among six established appraisal dimensions (pleasantness, certainty, control, responsibility, effort, and attention), hope and fear are primarily characterized by the dimensions of uncertainty or ambiguity (in which they are similar) and pleasantness (in

which they are distinct) (Lerner and Keltner, 2001, Smith and Ellsworth, 1985, Winterich and Haws, 2011).

Hope is a positive emotion associated with “a strong desire to be in a different situation than at present” (Lazarus, 1999, p. 663). It arises when an individual envisions an important, yet uncertain goal with a probability of achieving it (Lazarus, 1999, MacInnis and De Mello, 2005). This conceptualization highlights that hope is a future-focused emotion (Winterich & Haws, 2011) that makes individuals feel optimistic about achieving an uncertain, ambiguous goal (MacInnis and De Mello, 2005, Winterich and Haws, 2011). In other words, it is a constructive response to a threatening, unfavorable situation (Lazarus, 1999, Nabi et al., 2018).

In contrast, fear is a negative emotion associated with ambiguity in the presence of a potential threat, danger, and loss (Lerner and Keltner, 2001, Smith and Ellsworth, 1985). In other words, fearful individuals also feel less in control in that situation (Lerner and Keltner, 2001, Smith and Ellsworth, 1985). Research has argued that fear is a part of the threat-management system (Bracha, 2004), assisting individuals to assess and identify problems in the environment (Tooby & Cosmides, 2008) and driving them to take immediate action to resolve such problems (Blanchard, Griebel, Pobbe, & Blanchard, 2011). Traditionally, more negative emotions have been used in donor appeals (Bagozzi & Moore, 1994). Although, advertising appeals are usually not exclusively negative and may induce positive emotions as well (Cavanaugh et al., 2015, Septianto et al., 2018).

Consequently, while both hope and fear are primarily characterized by the appraisal of ambiguity in a situation (Lerner and Keltner, 2001, Smith and Ellsworth, 1985, Winterich and Haws, 2011), they influence the way individuals perceive such ambiguity in distinct manners. Hope motivates individuals to view ambiguity in a positive manner, making them more open to it (MacInnis and De Mello, 2005, Winterich and Haws, 2011). In contrast, fear is associated with a sense of loss of control in the presence of threats (Lerner and Keltner, 2001, Smith and Ellsworth, 1985), while at the same time individuals seek to resolve such threats (Blanchard et al., 2011). Hence, we predict that fearful individuals should experience higher levels of discomfort with ambiguity than hopeful individuals.

2.3. The moderating role of numerical information format

Building on the preceding section, we further argue that hope and fear drive individuals to seek information in different ways. Consequently, these individuals are more likely to be persuaded by different presentations of numerical information. Research demonstrates that consumers are affected by how statistics-based and numerical information is delivered (Chandran and Menon, 2004, Gourville, 2003, Wong and Kwong, 2005). Statistical information can be presented temporally (minute, hourly, daily, yearly) which influence the use of smaller or larger statistical sizes (Chang & Lee, 2009), or presented in ratio or statistical form (Chang & Lee, 2010).

Previous research on consumers decisions based on numerical information has established that the presentations of numerical information can influence how consumers infer about a product (Kardes et al., 2004, Nelson, 1970, Van Osselaer and Janiszewski, 2011). Numerical information (e.g., product attributes) signal product performance or benefits that are difficult to be experienced pre-purchase behavior (Nelson, 1970, Van Osselaer and Janiszewski, 2011). Consequently, consumers would process such information in terms of the magnitude

of benefits or costs associated with a product (Monga and Bagchi, 2011, Schley and Peters, 2014). For instance, information presented in larger fonts (Coulter & Coulter, 2005) and specific in default units (Lembregts & Pandelaere, 2012) are easier to process, thus increasing favorable consumer evaluations.

Of particular relevance to our research is how consumers infer numerical information associated with precision (Lembregts & Pandelaere, 2018). In particular, prior research in this area suggests that information specified in a more precise format is associated with less ambiguity (Lembregts and Pandelaere, 2018, Rothschild et al., 2011, Welsh et al., 2011). For example, a more precise number is often used when answering factual questions because it gives a sense of confidence (Welsh et al., 2011). Consumers are also more likely to infer that a numerical product attribute to be more predictable (i.e., less uncertain) when it is presented in a point value (vs. range) format. Supporting this notion, Lembregts and Pandelaere (2018) found that consumers who feel threatened prefer a product attribute (e.g., battery life, screen size) presented with a point value (vs. range) because it implies that the product benefit is more predictable.

Building on these findings on consumer decisions based on numerical information (Lembregts and Pandelaere, 2018, Rothschild et al., 2011, Welsh et al., 2011) and informed by the Appraisal Tendency Framework of emotion (ATF; Han et al., 2007, Lerner and Keltner, 2001), we predict that emotions can influence the effectiveness of how consumers process and prefer different formats of numerical information. As discussed, the appraisal of uncertainty or ambiguity is the key appraisal dimension of hope and fear (Lerner and Keltner, 2001, Smith and Ellsworth, 1985, Winterich and Haws, 2011). However and more importantly, hopeful and fearful consumers perceive ambiguity in a contrasting manner. While hope makes individuals to optimistically view and embrace ambiguity (MacInnis and De Mello, 2005, Winterich and Haws, 2011), fear motivates consumers to resolve such ambiguous situations (Blanchard et al., 2011, Lerner and Keltner, 2001). Hence, we expect that fear will lead to higher levels of discomfort for ambiguity than hope.

Accordingly, a 'match-up' between emotions (hope vs. fear) and numerical format (ranges vs. point values) can be perceived as a way for consumers to resolve their discomfort for ambiguity. Consequently, consumers feeling fearful, who experience high levels of discomfort for ambiguity, should prefer more a point value (i.e., a more precise format) because this format signal predictability and less ambiguity (Lembregts & Pandelaere, 2018). On the other hand, we expect consumers feeling hopeful, who have low levels of discomfort to ambiguity, should prefer a numerical information with a range (vs. point value) format because a less precise format allows them to imagine outcomes that are more favorable (Ketelaar et al., 2018, Septianto, Northey, et al., 2019b).

We further argue that because there is a congruence between fear and a point value format and between hope and a range format, this match (vs. mismatch) between specific emotion and numerical format can subsequently increase perceived instrumentality. Perceived instrumentality refers to perceptions regarding one's behavioral impact (Jin and He, 2018, Sharma and Morwitz, 2016). Hence, when consumers feeling fearful evaluate a point value format, their discomfort for ambiguity is resolved, leading them to perceive that their support can be valuable and instrumental in supporting the environmental supports. In addition, when consumers feeling hopeful evaluate a range format, they would favorably perceive how their support can be instrumental in bringing positive change. Formally, we hypothesize that (see Fig. 1 for the conceptual model):

H1

Hope will increase the effectiveness of numerical information specified as a range value format, whereas fear will increase the effectiveness of numerical information specified as a point value format.

H2

Discomfort with ambiguity and perceived instrumentality (in a serial mediation) will explain emotion effects on support to conservation efforts.

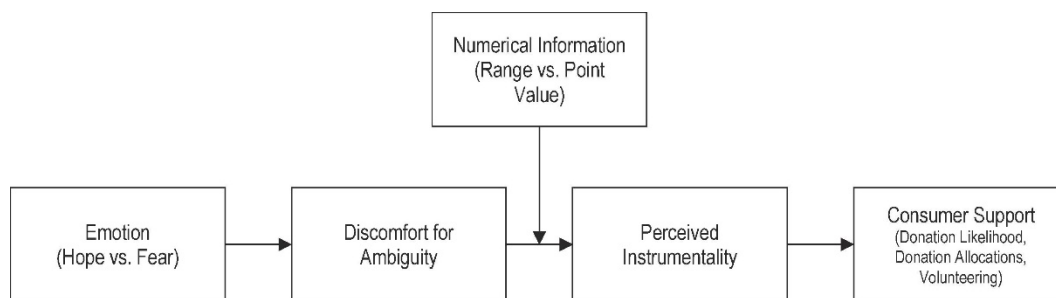


Fig. 1. Conceptual model.

3. Overview of studies

We conducted three studies to test our hypotheses. Study 1 offered initial evidence on Hypothesis 1 by examining consumers' emotions when thinking about an environmental issue and how those emotions differentially predict likelihood to donate after evaluating an ad with numerical information specified with a point value or a range format. Study 2 sought to test Hypotheses 1 and 2 by directly manipulating emotion states and examining the mediating role of discomfort with ambiguity and perceived instrumentality. We also used donation allocations as the dependent variable. Study 3 provided further support for Hypothesis 1 by manipulating both emotions and numerical information in the ad. Furthermore, we also examined a different type of support, volunteering, as the dependent variable.

4. Study 1

Study 1 aims to provide initial evidence on Hypothesis 1 by examining how participants' emotions associated with an environmental issue (hope, fear, disgust, guilt, sadness, and anger) can influence their likelihood to donate following an ad with either numerical information presented as a point value or a range format. Consistent with Hypothesis 1, increasing hope should be associated with a higher likelihood to donate following an ad with a point value information, whereas increasing fear should be associated with a higher likelihood to donate following an ad with a range information.

4.1. Methods

4.1.1. Participants and design

Two hundred and seven participants located in the U.S. (48% females, $M_{\text{age}} = 34.29$, $SD = 11.10$; see Appendix A for full demographic profiles) were recruited from Amazon Mechanical Turk in exchange of financial compensation. This study employed a 6 (emotion: hope, fear, disgust, guilt, sadness, anger; within-subjects) \times 2 (numerical information: range, point value; between-subjects) mixed design.

4.1.2. Procedure

Participants were initially asked to report their feelings when thinking about deforestation issue and the efforts to tackle that issue on a 7-point scale (1 = not at all, 7 = extremely). We measured our focal emotions, hope (“hopeful” and “optimistic”; $\alpha = 0.92$) and fear (“fearful” and “anxious”; $\alpha = 0.84$). In addition, we measured other emotions to make sure that our effects are driven by hope and fear (and not these other emotions). Specifically, as suggested by prior research (Smith & Leiserowitz, 2014), we measured disgust (“disgusted” and “repulsed”; $\alpha = 0.74$), guilt (“guilt-ridden” and “remorseful”; $\alpha = 0.88$), sadness (“sad” and “depressed”; $\alpha = 0.89$), and anger (“angry” and “mad”; $\alpha = 0.93$). These items were obtained from prior research examining these specific emotions (Chowdhry et al., 2015, Lerner and Keltner, 2001, Lerner et al., 2004, Winterich and Haws, 2011).

Participants were then asked to evaluate an ad from WWF related to deforestation. We developed two ads with identical image and altered the body copy to manipulate the numerical information format (see Appendix B for the sample stimuli). Specifically, in the point value (range) format, the statement was, “If we take action now, we can save 230 (210–250) million ha of forest by 2050” (WWF, 2018). As a manipulation check, we asked participants the extent to which the information in the ad was precise on a 7-point scale (1 = not at all, 7 = extremely) (Lembregts & Pandelaere, 2018). For the dependent variable, participants indicated their likelihood to donate to support WWF in regards to deforestation issue on a 7-point scale a 7-point scale (1 = not likely at all, 7 = extremely likely).

4.2. Results and discussion

4.2.1. Manipulation check

An independent sample *t*-test revealed that participants perceived numerical information with a point value format to be more precise than with a range format ($M_{\text{point}} = 5.60$, $M_{\text{range}} = 4.88$, $t(205) = 3.46$, $p = .001$).

4.2.2. Likelihood to donate

Following prior research (Cavanaugh et al., 2015), we ran a mixed effect model with subject random intercept to account for repeated within-subject measurements for emotion. As expected, results revealed significant effects for hope ($F(1, 197) = 45.60$, $p < .001$), fear ($F(1, 197) = 3.97$, $p = .048$), sadness ($F(1, 197) = 4.06$, $p = .045$). However and as predicted, there were significant interaction effects between hope and numerical format ($F(1, 197) = 20.65$, $p < .001$) and between fear and numerical format ($F(1, 197) = 9.32$, $p = .003$).

When we examined slope analyses for each numerical format condition, the effects were also consistent with our predictions. We found that increasing hope was associated with a higher

likelihood to donate after participants evaluated an ad presented with numerical information with a range format ($B = 0.72$, $SE = 0.09$, $t = 8.16$, $p < .001$), but not with a point value format ($B = 0.10$, $SE = 0.08$, $t = 1.17$, $p = .243$). In contrast, increasing fear was associated with a higher likelihood to donate after participants evaluated an ad presented with numerical information with a point value format ($B = 0.43$, $SE = 0.11$, $t = 3.93$, $p < .001$), but not with a range format ($B = -0.09$, $SE = 0.11$, $t = -0.82$, $p = .412$).

4.2.3. Discussion

These findings provided initial support for Hypothesis 1 such that hope increased the effectiveness of numerical information with a range format, while fear increased the effectiveness of numerical information with a point value format. Moreover, these effects still held even when we controlled for other emotions (sadness, disgusted, guilt, and anger). Hence, our predicted emotion effects on the effectiveness of different numerical formats were driven by hope and fear (and not other emotions).

5. Study 2

Study 2 extends the findings of Study 1 by directly manipulating emotion states to provide stronger causal relationship evidence between emotion and support to conservation efforts. Instead of measuring ‘likelihood to donate’, we also used a different dependent variable as a proxy of behavioral measure.

5.1. Methods

5.1.1. Participants and design

Two hundred and fourteen participants located in the U.S. (35% females, $M_{age} = 36.39$, $SD = 11.64$; see Appendix A for full demographic profiles) were recruited from Amazon Mechanical Turk in exchange of financial compensation. This study employed a 2 (emotion: hope, fear) \times 2 (numerical information: range, point value) between-subjects design.

5.1.2. Procedure

Participants participated in two ostensibly, unrelated tasks. The first task served as an emotion induction task. Following prior research (Griskevicius et al., 2010, Septianto, An, et al., 2019a, Winterich and Haws, 2011), we asked participants to read a short narrative (approximately 500 words) to elicit specific emotion states. The narrative in both hope and fear conditions described someone trying to find a job posting for an ideal position. However, while in the hope condition, the character remained optimistic that he/she would obtain the job, the character in the fear condition felt pessimistic and afraid that he/she would not obtain the job (Winterich & Haws, 2011).

As emotion manipulation checks, participants were asked their emotion states after reading the narrative on a 7-point scale (1 = not at all, 7 = extremely) using the same items as those in Study 1 (“hopeful” and “optimistic” for hope, $\alpha = 0.97$; “fearful” and “anxious” for fear, $\alpha = 0.86$).

In the second task, participants were asked to evaluate similar ads as Study 1¹. Afterwards, for the focal dependent variable, participants were asked whether they would be willing to

know more about how they can support WWF in its conservation efforts (yes = 1, no = 0). They were explicitly told that if they indicated yes, we would ask for their personal email so that WWF can send them additional information.

5.2. Results and discussion

5.2.1. Manipulation check

Independent sample t-tests on the levels of hope and fear revealed that participants in the hope condition reported higher levels of hope than those in the fear condition ($M_{\text{hope}} = 6.03$, $M_{\text{fear}} = 2.45$, $t(212) = 18.40$, $p < .001$). In contrast, participants in the fear condition reported higher levels of fear than those in the hope condition ($M_{\text{hope}} = 5.65$, $M_{\text{fear}} = 3.61$, $t(212) = 9.65$, $p < .001$). In addition, participants perceived numerical information with a point value format to be more precise than with a range format ($M_{\text{point}} = 5.30$, $M_{\text{range}} = 4.71$, $t(212) = 3.07$, $p = .002$).

5.2.2. Consumer choice

We conducted a moderated logistic regression analysis with emotion (neutral = 0, fear = 1, hope = 2), numerical information (point value = 1, range = 2), and their interaction as independent variables and consumer choice to receive additional information (1 = yes, 0 = no) as the dependent variable. There were significant main effects of emotion ($B = -2.80$, $SE = 0.90$, $\chi^2(1) = 9.61$, $p = .002$) and numerical information ($B = -3.00$, $SE = 0.90$, $\chi^2(1) = 11.02$, $p = .001$). However and as expected, these were qualified by a significant interaction effect ($B = 1.96$, $SE = 0.57$, $\chi^2(1) = 11.74$, $p = .001$).

As can be seen in Fig. 2, participants in the fear condition were more likely to provide their personal email to received additional information after evaluating an ad with a point value format (54%) than with a range format (29%, $\chi^2(1) = 6.81$, $p = .009$). In contrast, participants in the hope condition were more likely to provide their personal email to received additional information after evaluating an ad with a range format (56%) than with a point value format (33%, $\chi^2(1) = 5.24$, $p = .022$). From a different perspective, when evaluating an ad with a point value format, participants were more likely to provide their personal email when experiencing fear (54%), as compared to hope (33%, $\chi^2(2) = 4.42$, $p = .035$). However, when evaluating an ad with a range format, participants were more likely to provide their personal email when experiencing hope (56%), as compared to fear (29%, $\chi^2(2) = 7.82$, $p = .005$).

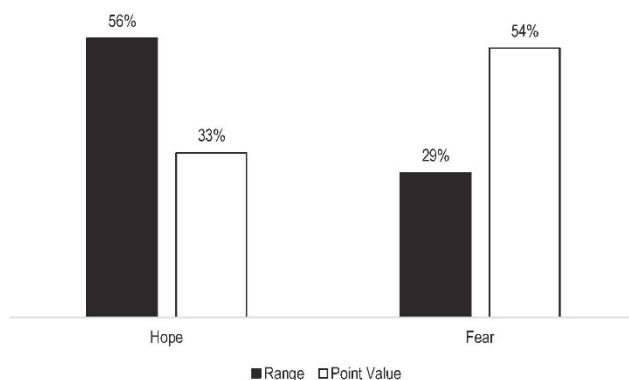


Fig. 2. Percentage giving personal email to received additional information by emotion and numerical information conditions (Study 2).

5.2.3. Discussion

The results of Study 2 provided evidence for Hypothesis 1 by directly manipulating emotion states. Specifically, participants feeling fearful reported higher donation allocations after evaluating an ad with a point value (vs. range) numerical information. In contrast, participants feeling hopeful reported higher donation allocations following an ad with a range (vs. point value) numerical information.

6. Study 3

Study 3 aims to extend the findings of Studies 1 and 2 in three meaningful ways. First, we seek to establish the underlying mechanism driving our predictions (i.e., discomfort for ambiguity). Second, we use donation allocations as the dependent variable. Finally, we recruited participants from a different country (i.e., Malaysia) to enhance generalizability of our findings. In particular, our findings have a significant relevance because Malaysia has the highest rate of deforestation, losing over 14% of its forest between 2000 and 2012 (Butler, 2013).

6.1. Methods

6.1.1. Participants and design

Two hundred and fifty-nine undergraduate students (77% females, $M_{\text{age}} = 22.10$, $SD = 0.85$) were recruited from a public university in Malaysia in exchange for extra course credit. This study employed a 2 (emotion: hope, fear) \times 2 (numerical information: range, point value) between-subjects design.

6.1.2. Procedure

Study 3 used similar procedure and materials to Study 2 with three exceptions. First, after participants completed the emotion induction task, we measured the posited mediator, discomfort for ambiguity (Roets & Van Hiel, 2011), using three statements (“I don’t like situations that are uncertain”; “I feel uncomfortable when I don’t understand the reason why an event occurred in my life”; “I dislike it when a statement could mean many different things”; $\alpha = 0.86$), measured on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Second, we used identical ads to those of Study 1. Third, for the dependent variable, participants were then asked to imagine they have an additional \$50 and they could allocate a portion of that money as a donation. Thus, the dependent variable was donation allocations (\$0, \$10, \$20, \$30, \$40, or \$50)². Lastly, we measured perceived instrumentality (Sharma & Morwitz, 2016) using three items (I feel my donation would ... “make an impact,” “be helpful,” “be valuable;” $\alpha = 0.93$) on a 7-point scale (1 = not at all, 7 = extremely).

6.2. Results and discussion

6.2.1. Manipulation checks

Independent sample t-tests on the levels of hope and fear revealed that participants in the hope condition reported higher levels of hope than those in the fear condition ($M_{\text{hope}} = 5.50$, $M_{\text{fear}} = 4.63$, $t(257) = 5.74$, $p < .001$). In contrast, participants in the fear condition reported higher levels of fear than those in the hope condition ($M_{\text{hope}} = 5.07$, $M_{\text{fear}} = 4.31$,

$t(257) = 4.79, p < .001$). Finally, participants also perceived numerical information with a point value format to be more precise than with a range format ($M_{\text{point}} = 5.48, M_{\text{range}} = 4.77, t(257) = 3.88, p < .001$).

6.2.2. Donation allocations

We conducted a two-way ANOVA with emotion, numerical information, and their interaction as independent variables and donation allocations as the dependent variable. There were non-significant main effects of emotion or numerical information; however and as predicted, the interaction between emotion and numerical information was significant ($F(1, 255) = 19.14, p < .001$).

Specifically, participants in the fear condition reported higher donation allocations after evaluating an ad with a point value (vs. range) numerical format ($M_{\text{point}} = 29.08, M_{\text{range}} = 23.39, t(255) = 2.63, p = .010$). Conversely, participants in the hope condition reported higher donation allocations after evaluating an ad with a range (vs. point value) numerical format ($M_{\text{point}} = 24.29, M_{\text{range}} = 32.15, t(255) = 3.57, p = .001$). Looking at differently, participants in the fear (vs. hope) condition reported higher donation allocations after evaluating an ad with a point value numerical format ($M_{\text{hope}} = 24.29, M_{\text{fear}} = 29.08, t(255) = 2.21, p = .029$), whereas participants in the hope (vs. fear) reported higher donation allocations after evaluating an ad with a range numerical format ($M_{\text{hope}} = 32.15, M_{\text{fear}} = 23.39, t(255) = 3.97, p < .001$; see Fig. 3). These results supported Hypothesis 1.

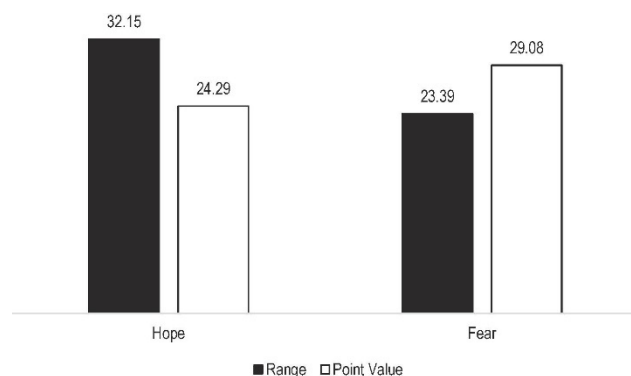


Fig. 3. Donation allocations (US\$) by emotion and numerical information conditions (Study 3).

6.2.3. Moderated serial mediation analysis

As stated in Hypothesis 2, we predicted that discomfort for ambiguity and perceived instrumentality mediated emotion effects on donation allocations. Consistent with the conceptual model, We tested this using PROCESS Model 91 v3.1 with 10,000 bootstrap resamples (Hayes, 2017). Specifically, we examined the indirect effects of emotion (hope = 1, fear = 0) on donation allocations, moderated by numerical information (range = 1, point value = 0), via discomfort for ambiguity and perceived instrumentality. We found a significant index of moderated mediation on the path emotion \rightarrow discomfort for ambiguity \rightarrow perceived instrumentality \rightarrow donation allocations ($B = 1.8016, SE = 0.7288$,

95% CI: 0.6544, 3.4804). Specifically, in the point value condition, the indirect effect was significant ($B = -1.3018$, $SE = 0.5370$, 95% CI: -2.5278 , -0.4699). In the range condition, the indirect effect was significant ($B = 0.4998$, $SE = 0.2950$, 95% CI: 0.0377 , 1.1748 ; see Appendix D for full mediation results). These findings supported Hypothesis 2.

6.2.4. Discussion

Results of Study 3 provided additional support for Hypothesis 1 by examining donation allocations. Moreover, we also tested for the underlying mechanism driving the emotion effects (H2) – a serial mediation of discomfort for ambiguity and perceived instrumentality.

7. Study 4

Study 4 is conducted with two important purposes. First, we aim to provide practical implications by showing that both emotions and different formats of numerical information can be purposively activated using an ad. Second, we also want to examine a different type of support, namely volunteering, to provide stronger empirical evidence on our predictions.

7.1. Methods

7.1.1. Participants and design

Two hundred and ninety-nine undergraduate students (65% females, $M_{age} = 22.02$, $SD = 1.19$) were recruited from a public university in Malaysia in exchange for extra course credit. This study employed a 3 (emotion: hope, fear, neutral) \times 2 (numerical information: range, point value) between-subjects design.

7.1.2. Procedure

We developed six ads from Global Environment Centre (GEC), a nonprofit organization in Malaysia (see Appendix B). Following past research (Lembregts and Pandelaere, 2018, Septianto et al., 2018), we altered the body copies to manipulate both emotions and numerical information. Specifically, we manipulated hope (fear) using the statement, “Feeling HOPEFUL (FEARFUL)? We can make a difference today.” In the neutral condition, we excluded the first statement containing emotion word. We manipulated the point value (range) information using the statement, “Help us save 137 (124–150) species of plants, animals and insects every day.” As manipulation checks, we asked participants rated the emotional appeal of the ad using the same four items we used in Studies 1–3 (“hopeful” and “optimistic” for hope; “fearful” and “anxious” for fear). We also asked participants the extent to which the information in the ad was precise as a manipulation check for the numerical information format.

For the dependent variable, participants read a short description about GEC and were told that this organization needed help to complete a follow-up survey that would take around 5–10 min (see Appendix C for the instruction). Importantly, participants were explicitly told that there was no additional compensation for them. Thus, the dependent variable was whether participants completed the follow-up survey (1 = yes, 0 = no). Past research has shown that this approach worked effectively as a proxy behavioral measure for volunteering (Septianto et al., 2018, Winterich et al., 2013).

7.2. Results and discussion

7.2.1. Manipulation checks

Two-way ANOVAs on the levels of hope ($F(2, 293) = 11.38, p < .001$) and fear ($F(2, 293) = 9.99, p < .001$) revealed only a significant main effect of emotion. Specifically, participants evaluating an ad with a hope appeal ($M = 5.41$) reported higher levels of hope than those evaluating an ad with a fear appeal ($M = 4.48, t(293) = 4.40, p < .001$) or a neutral appeal ($M = 4.62, t(293) = 3.80, p < .001$). In contrast, participants evaluating an ad with a fear appeal ($M = 4.89$) reported higher levels of fear than those evaluating an ad with a hope appeal ($M = 4.09, t(293) = 3.47, p < .001$) or a neutral appeal ($M = 3.93, t(293) = 4.19, p < .001$).

A two-way ANOVA on the perceived precision of numerical information revealed only a significant main effect of numerical information format ($F(1, 293) = 5.36, p = .021$). Specifically, participants perceived numerical information with a point value format to be more precise than with a range format ($M_{\text{point}} = 5.11, M_{\text{range}} = 4.71, t(293) = 2.31, p = .021$). These results suggested that our manipulations were successful.

7.2.2. Volunteering

We conducted a moderated logistic regression analysis with emotion (neutral = 0, fear = 1, hope = 2), numerical information (point value = 1, range = 2), and their interaction as independent variables and volunteering (1 = yes, 0 = no) as the dependent variable. There were non-significant main effects of emotion or numerical information; however and as expected, there was a significant interaction effect ($B = 0.63, SE = 0.29, \chi^2(1) = 4.81, p = .028$).

As can be seen in Fig. 4, participants in the fear condition were more likely to volunteer after evaluating an ad with a point value format (73%) than with a range format (40%, $\chi^2(1) = 10.31, p = .001$). In contrast, participants in the hope condition were more likely to volunteer after evaluating an ad with a range format (76%) than with a point value format (41%, $\chi^2(1) = 12.62, p < .001$). From a different perspective, when evaluating an ad with a point value format, participants were more likely to participate when experiencing fear (73%), as compared to hope (41%) and neutral (44%, $\chi^2(2) = 12.35, p = .002$). On the other hand, when evaluating an ad with a range format, participants were more likely to participate when experiencing hope (76%), as compared to fear (40%) and neutral (48%, $\chi^2(2) = 13.95, p = .001$). These results provided strong evidence for Hypothesis 1.

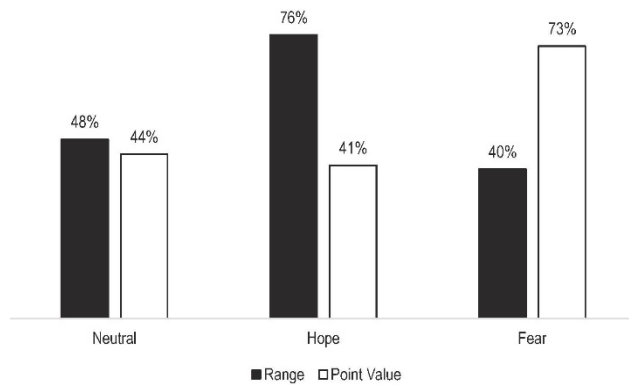


Fig. 4. Percentage participation in follow-up survey by emotion and numerical information conditions (Study 4).

7.2.3. Discussion

Results of Study 4 offered further support to our predictions in the context of volunteering. In addition, we demonstrated managerial relevance by showing how we can elicit emotions using the body copies of an ad.

8. General discussion

Our research addresses the need for guidance on framing charitable appeals to combat the increasingly competitive donation sphere (Giving, 2018) and the need for increased funding for conservation projects and education (Straughan, 2008). Specifically, the research examines the ways NPOs and government agencies can develop effective charitable advertising by matching different emotions and numerical information format. Across three experimental studies, we provided concrete empirical evidence that hope will increase the effectiveness of numerical information specified as a point value format, whereas fear will increase the effectiveness of numerical information specified as a range format (Studies 1–3).

Study 1 offered initial support by examining how consumers' self-reported emotions when thinking about an environmental issue (hope, fear, disgust, guilt, sadness, and anger) can influence their likelihood to donate following an ad with either numerical information presented as a point value or a range format. Study 2 extends Study 1 by manipulating emotion states using an unrelated task to provide stronger causal relationship evidence between emotion and support to conservation efforts (donation allocations). Further, we find support that emotion effects are mediated by discomfort with ambiguity. Finally, in Study 3, we develop advertisements and manipulate emotions using ad messages to provide managerial implications. We also extend our predictions in the context of volunteering.

Our findings make three important contributions, theoretically and managerially. The main contribution of this paper is the development of a novel perspective in which NPOs and government agencies can effectively gain support from the public. Considering that only 3% of charitable donations go to conservation and animal welfare NPOs (Giving, 2018), our research helps to create effective advertising to attract increased support from the public. The increasing rise of conservation issues, including in part the impacts of climate change, means that more support for NPOs which address these issues are needed in the future. Thus, we must find avenues to attract more funding for organizations that address these conservation and biodiversity issues. Our findings highlight that conservation NPO marketers wishing to

use positive emotional appeals, specifically hope, should use numerical information specified as a point value format. Conversely, if marketers wish to use negative emotions, specifically fear they should use a range format.

Second, this research contributes to the literature on emotion appraisal (Han et al., 2007, Lerner and Keltner, 2001, So et al., 2015). In particular, previous studies have identified the importance of appraisal dimensions in understanding the psychological and behavioral consequences of emotions (Lerner and Keltner, 2001, Singh et al., 2018). However, the underlying process of how specific appraisals can influence consumer decision making is less clear (So et al., 2015). We contribute to this literature by showing that while fear and hope are associated the appraisal of uncertainty (or ambiguity) (Smith and Ellsworth, 1985, Winterich and Haws, 2011), consumers experiencing these emotions have distinct ways to perceive such ambiguity. That is, experiencing fear (vs. hope) increases the levels of discomfort for ambiguity. Thus, our findings highlight a more nuanced understanding of how two emotions associated with the same appraisal might have a differential lens in perceiving such appraisal, leading to distinct effects on consumer judgments and decisions.

Third, the findings of our research also add to the literature on numerical information (Hsee et al., 2009, Lembregts and Pandelaere, 2018, Pena-Marin and Bhargave, 2016) by identifying how emotions might influence consumer judgments regarding numerical information. Such findings are significant because prior studies in this area have demonstrated that consumers make different judgments of numerical information, depending on the presentation and format of the number (Coulter and Coulter, 2005, Lembregts and Pandelaere, 2012, Lembregts and Pandelaere, 2018). However, such research has typically focused on the cognitive aspects of consumer judgment process (e.g., sense of control, evaluation mode, message framing) (Chang and Lee, 2010, Hsee, 1996, Lembregts and Pandelaere, 2018). We further demonstrate the influences of discrete emotions in this regard and establish the underlying process.

Our research contains some limitations and provides opportunities for future research. For instance, while our results offer some behavioral measures in the experimental design, it would thus be of interest to collaborate with an NPO and conduct a field experiment to provide real managerial implications in this context. Also, we also test the robustness of our effects in Malaysia. However, future research may wish to focus on other conservation and biodiversity efforts in other parts of the world, where other issues may be more prevalent (i.e., water scarcity in the U.S West Coast).

From a broader perspective, this research examines short term behavior change as our research focuses on one-off donations. Yet, sustained donations, or in other words a longer-term behavior change, is more complex than one-off donations. Future research should examine the ability to effect long term behavior change through soliciting donations (via advertising), as much research focuses on one-off donations (Prendergast & Maggie, 2013). Here, researchers should bear in mind that behavior change is impacted not by merely providing more information to individuals but is also constrained by situational, institutional and social barriers for example (i.e., previous donation behavior, income) (Kemper & Ballantine, 2017). Therefore, more than just demographics need to be taken in account when targeting donors.

In addition, while our research focuses on conservation, and deforestation and species conservation specifically, NPOs may choose to focus on other or more specific conservation

areas. As such, future research is warranted in appeals that may be more targeted in their efforts such as focusing on specific species (i.e., saving the Panda) and biodiversity. Overall, our research demonstrates that NPOs who address species conservation and biodiversity can utilize the power of framing techniques to raise funds for the cause, but also to raise public awareness.

Appendix A. . Full demographic profiles of MTurk participants (Studies 1 and 2)

	Study 1	Study 2
Gender		
Male	52%	65%
Female	48%	35%
Education		
Less than High school	0%	1%
High School or equivalent (e.g., GED)	20%	27%
Trade/technical/vocational training	10%	16%
Bachelor's degree	50%	50%
Post-graduate qualification	20%	6%
Ethnic Background		
Caucasian	70%	70%
African American	8%	10%
Native Hawaiian or Other Pacific Islander	1%	1%
Asian	6%	10%
Native American or Alaska Native	6%	1%
Hispanic or Latino	7%	8%
Other	2%	1%
Annual Household Income		
Less than \$15,000	10%	7%
\$15,000–\$24,999	9%	9%
\$25,000–\$34,999	10%	15%
\$35,000–\$49,999	24%	20%
\$50,000–\$84,999	31%	33%
\$85,000–\$99,999	8%	6%
Greater than \$100,000	8%	10%

Appendix B. . Samples ad stimuli



Point Value Format (Studies 1 and 3)



Point Value Format (Study 2)



Hope – Range Format (Study 4)

Appendix C. . Instruction for dependent variable (Study 4)

The Global Environment Centre (GEC) was established in 1998 to work on environmental issues of global importance. The Centre is registered in Malaysia as a non-profit organization (Reg. no. 473058-T) but works regionally and internationally both directly and through many partners. It supports information exchange and capacity building as well as undertakes

strategic projects particularly in developing countries. We seek to support the protection of the environment and sustainable use of the natural resources to meet local, regional and global needs, through strategic partnerships with communities and like-minded organizations.

As a not-for-profit organization with limited government funding, GEC relies not only on donations from the public but also, pro-bono work from professionals who donate their time and expertise in various areas (e.g., legal, finance, business planning, marketing) to help the organization achieve its strategic objectives.

It is in this capacity that GEC has asked us (the researchers) to approach individuals to give their time and expertise to evaluate their past advertising campaign. It will take you around 5–10 min to complete the task. Would you be interested in doing so at the end of the survey?

If yes, we will give you more specific details with regards to the task after the survey and you can work on it online at that point. Please keep in mind that this is not part of the survey and there is no compensation for this task but your help will be very much appreciated by GEC.

Appendix D. . Full mediation results (Study 3)

Appendix D. Full Mediation Results (Study 3)

Antecedent	Consequent											
	Discomfort for Ambiguity (M1)				Perceived Efficacy (M2)				Donation Allocations (Y)			
	Coef _f	SE	t	p	Coef _f	SE	t	p	Coef _f	SE	t	p
Constant	5.73 1	0.26 7	21.4 58	< 0.001	0.81 1	0.96 1	0.84 4	0.399	5.47 8	4.81 7	1.13 7	0.257
Emotion (X)	0.75 8	0.16 7	4.54 6	< 0.001	0.14 3	0.16 4	0.87 2	0.384	1.54 5	1.54 4	1.00 2	0.318
Discomfort for Ambiguity (M1)	---	---	---	---	1.12 6	0.18 6	6.05 9	< 0.001	0.23 8	0.55 9	0.42 6	0.670
Numerical Information (W)	---	---	---	---	2.61 4	0.54 6	4.78 9	< 0.001	---	---	---	---
M1 × W	---	---	---	---	0.65 4	0.11 4	5.73 0	< 0.001	---	---	---	---
Perceived Efficacy (M2)	---	---	---	---	---	---	---	---	3.63 4	0.55 1	6.60 0	< 0.001
Model Summary	R ² = 0.075				R ² = 0.145				R ² = 0.150			
	F(1, 257) = 20.66, p < 0.001				F(4, 254) = 10.76, p < 0.001				F(3, 255) = 15.01, p < 0.001			

References

- Ames, D. R., & Mason, M. F. (2015). Tandem anchoring: Informational and politeness effects of range offers in social exchange. *Journal of Personality and Social Psychology, 108*(2), 254-274.
- Bagozzi, R. P., & Moore, D. J. (1994). Public service advertisements: Emotions and empathy guide prosocial behavior. *The Journal of Marketing, 56*-70.
- Bar-Anan, Y., Wilson, T. D., & Gilbert, D. T. (2009). The feeling of uncertainty intensifies affective reactions. *Emotion, 9*(1), 123-127.
- Biswas, A., & Burton, S. (1993). Consumer perceptions of tensile price claims in advertisements: an assessment of claim types across different discount levels. *Journal of the Academy of Marketing Science, 21*(3), 217-229.
- Blanchard, D. C., Griebel, G., Pobbe, R., & Blanchard, R. J. (2011). Risk assessment as an evolved threat detection and analysis process. *Neuroscience & Biobehavioral Reviews, 35*(4), 991-998.
- Bracha, H. S. (2004). Freeze, flight, fight, fright, faint: Adaptationist perspectives on the acute stress response spectrum. *CNS spectrums, 9*(9), 679-685.
- Butler, R. A. (2013). Malaysia has the world's highest deforestation rate, reveals Google forest map. Retrieved from <https://news.mongabay.com/2013/11/malaysia-has-the-worlds-highest-deforestation-rate-reveals-google-forest-map/>
- Cavanaugh, L. A., Bettman, J. R., & Luce, M. F. (2015). Feeling love and doing more for distant others: Specific positive emotions differentially affect prosocial consumption. *Journal of Marketing Research, 52*(5), 657-673.
- Chandran, S., & Menon, G. (2004). When a day means more than a year: Effects of temporal framing on judgments of health risk. *Journal of Consumer Research, 31*(2), 375-389.
- Chang, C.-T., & Lee, Y.-K. (2010). Effects of message framing, vividness congruency and statistical framing on responses to charity advertising. *International Journal of Advertising, 29*(2), 195-220.
- Chang, C. (2014). Guilt regulation: The relative effects of altruistic versus egoistic appeals for charity advertising. *Journal of Advertising, 43*(3), 211-227.
- Chang, C. T., & Lee, Y. K. (2009). Framing charity advertising: Influences of message framing, image valence, and temporal framing on a charitable appeal. *Journal of Applied Social Psychology, 39*(12), 2910-2935.
- Chowdhry, N., Winterich, K. P., Mittal, V., & Morales, A. C. (2015). Not all negative emotions lead to concrete construal. *International Journal of Research in Marketing, 32*(4), 428-430.

- Coulter, K. S., & Coulter, R. A. (2005). Size does matter: The effects of magnitude representation congruency on price perceptions and purchase likelihood. *Journal of Consumer Psychology, 15*(1), 64-76.
- Crowther, T. W., Glick, H. B., Covey, K. R., Bettigole, C., Maynard, D. S., Thomas, S. M., . . . Amatulli, G. (2015). Mapping tree density at a global scale. *Nature, 525*(7568), 201-205.
- Das, E., Kerkhof, P., & Kuiper, J. (2008). Improving the effectiveness of fundraising messages: The impact of charity goal attainment, message framing, and evidence on persuasion. *Journal of Applied Communication Research, 36*(2), 161-175.
- Disdier, A.-C., Marette, S., & Millet, G. (2013). Are consumers concerned about palm oil? Evidence from a lab experiment. *Food Policy, 43*, 180-189.
- Egea, J. M. O., & de Frutos, N. G. (2013). Toward consumption reduction: An environmentally motivated perspective. *Psychology & Marketing, 30*(8), 660-675.
- Erlandsson, A., Nilsson, A., & Västfjäll, D. (2018). Attitudes and donation behavior when reading positive and negative charity appeals. *Journal of Nonprofit & Public Sector Marketing, 30*(4), 444-474.
- Fan, L., Li, X., & Jiang, Y. (2018). Room for opportunity: resource scarcity increases attractiveness of range marketing offers. *Journal of Consumer Research, 46*(1), 82-98.
- Fishman, A., Oliveira, E., & Gamble, L. (2017). *Tackling Deforestation Through A Jurisdictional Approach*. Retrieved from
- Freeman, D., Aquino, K., & McFerran, B. (2009). Overcoming beneficiary race as an impediment to charitable donations: Social dominance orientation, the experience of moral elevation, and donation behavior. *Personality and Social Psychology Bulletin, 35*(1), 72-84.
- Giving USA. (2018). See the numbers – Giving USA 2018 Infographic. Retrieved from <https://givingusa.org/see-the-numbers-giving-usa-2018-infographic/>
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research, 35*(3), 472-482.
- Gourville, J. T. (2003). The effects of monetary magnitude and level of aggregation on the temporal framing of price. *Marketing Letters, 14*(2), 125-135.
- Griskevicius, V., Shiota, M. N., & Nowlis, S. M. (2010). The many shades of rose-colored glasses: An evolutionary approach to the influence of different positive emotions. *Journal of Consumer Research, 37*(2), 238-250.
- Han, S., Lerner, J. S., & Keltner, D. (2007). Feelings and consumer decision making: The appraisal-tendency framework. *Journal of Consumer Psychology, 17*(3), 158-168.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach, 2nd edition*. New York: Guilford Press.

- Hibbert, S., Smith, A., Davies, A., & Ireland, F. (2007). Guilt appeals: Persuasion knowledge and charitable giving. *Psychology & Marketing, 24*(8), 723-742.
- Hsee, C. K. (1996). The evaluability hypothesis: An explanation for preference reversals between joint and separate evaluations of alternatives. *Organizational Behavior and Human Decision Processes, 67*(3), 247-257.
- Hsee, C. K., Yang, Y., Gu, Y., & Chen, J. (2009). Specification seeking: how product specifications influence consumer preference. *Journal of Consumer Research, 35*(6), 952-966.
- IUCN. (2019). About IUCN. Retrieved from <https://www.iucn.org/about>
- Jin, L., & He, Y. (2018). How the frequency and amount of corporate donations affect consumer perception and behavioral responses. *Journal of the Academy of Marketing Science, 46*(6), 1-17.
- Kardes, F. R., Posavac, S. S., & Cronley, M. L. (2004). Consumer inference: A review of processes, bases, and judgment contexts. *Journal of Consumer Psychology, 14*(3), 230-256.
- Kemper, J. A., & Ballantine, P. W. (2017). Socio-technical transitions and institutional change: Addressing obesity through macro-social marketing. *Journal of Macromarketing, 37*(4), 381-392.
- Ketelaar, P. E., van't Riet, J., Thorbjornsen, H., & Buijzen, M. (2018). Positive uncertainty: the benefit of the doubt in advertising. *International Journal of Advertising, 37*(2), 256-269.
- Lazarus, R. S. (1999). Hope: An emotion and a vital coping resource against despair. *Social Research, 65*3-678.
- Lee, J. A., & Holden, S. J. (1999). Understanding the determinants of environmentally conscious behavior. *Psychology & Marketing, 16*(5), 373-392.
- Lembregts, C., & Pandelaere, M. (2012). Are all units created equal? The effect of default units on product evaluations. *Journal of Consumer Research, 39*(6), 1275-1289.
- Lembregts, C., & Pandelaere, M. (2018). Falling Back on Numbers: When Preference for Numerical Product Information Increases after a Personal Control Threat. *Journal of Marketing Research, 56*(1), 104-122.
- Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology, 81*(1), 146-159.
- Lerner, J. S., Small, D. A., & Loewenstein, G. (2004). Heart strings and purse strings carryover effects of emotions on economic decisions. *Psychological Science, 15*(5), 337-341.
- MacInnis, D. J., & De Mello, G. E. (2005). The concept of hope and its relevance to product evaluation and choice. *Journal of Marketing, 69*(1), 1-14.

- Merchant, A., Ford, J. B., & Rose, G. (2011). How personal nostalgia influences giving to charity. *Journal of Business Research*, 64(6), 610-616.
- Monga, A., & Bagchi, R. (2011). Years, months, and days versus 1, 12, and 365: the influence of units versus numbers. *Journal of Consumer Research*, 39(1), 185-198.
- Nabi, R. L., Gustafson, A., & Jensen, R. (2018). Framing Climate Change: Exploring the Role of Emotion in Generating Advocacy Behavior. *Science Communication*, Advance Online Access.
- National Geographic. (2019). Deforestation Explained. Retrieved from <https://www.nationalgeographic.com/environment/global-warming/deforestation/>
- Nelson, P. (1970). Information and consumer behavior. *Journal of Political Economy*, 78(2), 311-329.
- Onel, N., & Mukherjee, A. (2017). Why do consumers recycle? A holistic perspective encompassing moral considerations, affective responses, and self-interest motives. *Psychology & Marketing*, 34(10), 956-971.
- Park, K., & Lee, S. S. (2015). The role of beneficiaries' group identity in determining successful appeal strategies for charitable giving. *Psychology & Marketing*, 32(12), 1117-1132.
- Pena-Marin, J., & Bhargave, R. (2016). Lasting performance: Round numbers activate associations of stability and increase perceived length of product benefits. *Journal of Consumer Psychology*, 26(3), 410-416.
- Roets, A., & Van Hiel, A. (2011). Item selection and validation of a brief, 15-item version of the Need for Closure Scale. *Personality and Individual Differences*, 50(1), 90-94.
- Rothschild, Z. K., Landau, M. J., & Sullivan, D. (2011). By the numbers: Structure-seeking individuals prefer quantitative over qualitative representations of personal value to compensate for the threat of unclear performance contingencies. *Personality and Social Psychology Bulletin*, 37(11), 1508-1521.
- Schley, D. R., & Peters, E. (2014). Assessing "economic value" symbolic-number mappings predict risky and riskless valuations. *Psychological Science*, 25(3), 753-761.
- Septianto, F., An, J., Chiew, T. M., Paramita, W., & Tanudharma, I. (2019a). The similar versus divergent effects of pride and happiness on the effectiveness of loyalty programs. *Journal of Business Research*, 99, 12-22.
- Septianto, F., Northey, G., & Dolan, R. (2019b). The effects of political ideology and message framing on counterfeiting: The mediating role of emotions. *Journal of Business Research*, 99, 206-214.
- Septianto, F., Sung, B., Seo, Y., & Tugiman, N. (2018). Proud volunteers: the role of self-and vicarious-pride in promoting volunteering. *Marketing Letters*, 29(4), 501-519.

- Sharma, E., & Morwitz, V. G. (2016). Saving the masses: The impact of perceived efficacy on charitable giving to single vs. multiple beneficiaries. *Organizational Behavior and Human Decision Processes*, 135, 45-54.
- Singh, J. J., Garg, N., Govind, R., & Vitell, S. J. (2018). Anger Strays, Fear Refrains: The Differential Effect of Negative Emotions on Consumers' Ethical Judgments. *Journal of Business Ethics*, 151(1), 235-248.
- Small, D. A., & Verrochi, N. M. (2009). The face of need: Facial emotion expression on charity advertisements. *Journal of Marketing Research*, 46(6), 777-787.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48(4), 813-838.
- Smith, N., & Leiserowitz, A. (2014). The role of emotion in global warming policy support and opposition. *Risk Analysis*, 34(5), 937-948.
- So, J., Achar, C., Han, D., Agrawal, N., Duhachek, A., & Maheswaran, D. (2015). The psychology of appraisal: Specific emotions and decision-making. *Journal of Consumer Psychology*, 25(3), 359-371.
- Steg, L. (2008). Promoting household energy conservation. *Energy Policy*, 36(12), 4449-4453.
- Straughan, B. (2008). *The broader movement: Nonprofit environmental and conservation organizations, 1989-2005*. Retrieved from
- Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of Emotions* (pp. 114-137). New York: Guilford.
- Van Osselaer, S. M., & Janiszewski, C. (2011). A goal-based model of product evaluation and choice. *Journal of Consumer Research*, 39(2), 260-292.
- Verhaert, G. A., & Van den Poel, D. (2011). Empathy as added value in predicting donation behavior. *Journal of Business Research*, 64(12), 1288-1295.
- Welsh, M., Navarro, D., & Begg, S. (2011). *Number preference, precision and implicit confidence*. <https://compcogscisydney.org/publications/WelshNavarroBegg2011.pdf>
- White, K., & Peloza, J. (2009). Self-benefit versus other-benefit marketing appeals: Their effectiveness in generating charitable support. *Journal of Marketing*, 73(4), 109-124.
- Winterich, K. P., & Haws, K. L. (2011). Helpful hopefulness: The effect of future positive emotions on consumption. *Journal of Consumer Research*, 38(3), 505-524.
- Winterich, K. P., Mittal, V., & Aquino, K. (2013). When does recognition increase charitable behavior? Toward a moral identity-based model. *Journal of Marketing*, 77(3), 121-134.
- Wong, K. F. E., & Kwong, J. Y. (2005). Comparing two tiny giants or two huge dwarfs? Preference reversals owing to number size framing. *Organizational Behavior and Human Decision Processes*, 98(1), 54-65.

- WWF. (2018). Forests for a Living Planet. Retrieved from http://wwf.panda.org/our_work/forests/
- WWF. (2019a). Deforestation. Retrieved from <https://www.worldwildlife.org/threats/deforestation>
- WWF. (2019b). Forest Habitat. Retrieved from <https://www.worldwildlife.org/habitats/forest-habitat>

Felix Septianto is a Lecturer in Marketing at the University of Auckland Business School. As a consumer behaviour researcher, he broadly investigates how consumers' feelings shape their subsequent behaviours. Currently, he studies the implications in three domains: (1) advertising, (2) ethics and prosociality, (3) Asian markets. The findings of his research provide important implications for stakeholders such as marketers, public policy makers, and consumers, in order to devise effective strategies to improve consumer welfare.

Joya Kemper is a Lecturer in Marketing at the University of Auckland Business School and a PhD graduate of the University of Canterbury. Joya is passionate about social and environmental issues in marketing, and has published and presented several papers in this area, including the *Journal of Macromarketing* and *Journal of Social Marketing*. Her research interests include the broad areas of healthy and sustainable eating, social/macro-social marketing, ethical and sustainable issues surrounding business activities, and marketing education.

Tung Moi Chiew is a senior lecturer and the Deputy Dean of Postgraduate and International at the Universiti Malaysia Sabah, Malaysia. Her research primarily examines service marketing and she has published in leading marketing journals such as *Journal of Business Research*, *Australian Journal of Management*, *Journal of Retailing and Consumer Services*, among others.

¹ We adapted the statement wording such that in the point value condition, the statement was "... we can save *on average* 230 ..." and in the range condition, the statement was "... we can save *between* 210 and 250 ..." We included such minor modifications because there might be concerns that range format might be perceived as greater than the value of point value format. In addition, as a pre-test, we recruited one hundred and forty-one MTurk participants (38% females, $M_{\text{age}} = 39.04$, $SD = 12.60$), and randomly assigned them into one of four ad conditions (two ads we used in Study 1 and two ads we used in Study 2). We asked participants the extent to which the information in the ad was precise on a 7-point scale (1 = not at all, 7 = extremely) and the value is their action to support conservation efforts (1 = not valuable, 7 = extremely valuable). Participants perceived numerical information with a point value format to be more precise than with a range format (p 's > 0.05); however and as expected, there were non-significant differences on the levels of value (p 's > 10). These results indicate that the numerical format did not influence individuals' perceived value.

² We asked participants using Ringgit (the currency in Malaysia). The simple exchange rate was approximately 1 USD = 5 Ringgit. Hence, we asked them whether they were willing to donate 0, 50, 100, 150, 200, or 250 Ringgit. However, to simplify the interpretation of findings, we converted this into USD.