LETTER

Supporting Conservation: The Roles of Flagship Species and Identifiable Victims

Laura Thomas-Walters[1] & Nichola J Raihani[2]

[1] Department of Genetics, Evolution and Environment, University College London, Gower Street, London WC1E 6BT, UK
[2] Department of Experimental Psychology, University College London, 26 Bedford Way, London WC1H 0AP, UK

Abstract

Psychological insights into human behavior can have enormous applied value for promoting charitable giving. Nevertheless, the application of these insights to conservation appeals featuring nonhuman animals has scarcely been explored. Although people often donate more when presented with single "identifiable" victims, whether this effect also extends to nonhumans is not known. Similarly, although many conservation appeals feature flagship species, it is unclear whether flagship species generate increased donations. We experimentally investigated how (1) identifiable versus statistical beneficiaries and (2) flagship versus nonflagship species affected donations to a conservation charity. Unexpectedly, subjects did not donate more when presented with single identifiable beneficiaries rather than groups of beneficiaries. Flagship species, on the other hand, increased donation amounts relative to appeals featuring nonflagship species. We discuss how these findings can inform and improve the effectiveness of conservation fundraising appeals.

Introduction

At first glance, the fact that people are willing to sacrifice personal resources in order to donate to charity is somewhat puzzling. Donating to charity involves sacrificing personal resources to help others, with little or no expectation of direct reciprocity (Trivers 1971). Though puzzling from a classical economic perspective (Persky 1995), such behavior can be understood through an evolutionary lens if donors can benefit from attracting partners (e.g., Sylwester & Roberts 2013) or if donors are themselves more likely to be helped by others in future (i.e. indirect reciprocity, see Milinski *et al.* 2002 for an example). Indeed, these ultimate-level benefits can help us to understand why performing costly helpful actions can be subjectively rewarding (e.g., Andreoni 1990). Although an evolutionary perspective can help us to understand *why* people give to others, there is substantial variation in donation behavior that remains unexplained. In this regard, psychological perspectives on human behavior can shed light on charitable behav-

ior by identifying the contexts that are most salient to donors, and how these effects vary across different donor demographics.

One striking finding is that people are willing to donate larger sums to charity when they are presented with a single "identifiable victim," compared to when the true scale of the problem is emphasized and beneficiaries are presented as statistics (Schelling 1984; Jenni & Loewenstein 1997). Why should single "identifiable victims" arouse more compassion than when the scale of the problem is emphasized? One theory is that identified beneficiaries produce a greater empathic response due to the specificity and vividness of the information at hand (Jenni & Loewenstein 1997; Kogut & Ritov 2005). For example, in one study, identifying orphans via photographs caused increased neural activity in subjects' nucleus accumbens (a region of the brain associated with positive arousal) relative to control appeals featuring silhouettes (Genevsky *et al.* 2013). This increased arousal was associated with an increase in donations by people in the identifiable victim condition compared to the

control. An alternative explanation for the identifiable victim effect is that concern for beneficiaries grows as the reference group they are part of shrinks (Jenni & Loewenstein 1997). This may be because a donation is perceived as having greater impact on a single individual than if it is split up among many individuals, and donors enjoy giving more when their actions have greater impact (Duncan 2004; Lesner & Rasmussen 2014).

Although numerous studies have explored the identifiable victim effect using human beneficiaries, few have attempted to explore whether the identifiable victim effect extends to nonhuman species. One study using polar bears (*Ursus maritimus*) found that self-identified environmentalists were willing to donate similar amounts to identifiable and statistical beneficiaries, whereas nonenvironmentalists said they would donate significantly less to statistical beneficiaries (Markowitz *et al.* 2013). Nevertheless, in this study, decisions were based on intentions to donate rather than actual donations. Given the well-documented gap between intentions and behaviors (Sheeran 2002), this leaves considerable scope for further research to robustly explore the difference in donations to appeals featuring nonhuman identified or statistical beneficiaries.

A preference for helping identified beneficiaries is not the only bias displayed by people in their willingness to help others: *who* the beneficiary is also matters. For instance, charity appeals in India featuring low-caste children received fewer donations than appeals featuring generic Indian or high-caste children (Deshpande & Spears 2016). This preference for certain types of beneficiary also extends to the world of conservation, where it is commonly believed that people have a preference for flagship species (Clucas *et al.* 2008; Ducarme *et al.* 2013). Flagship species are generally popular, charismatic vertebrates (Walpole & Leader-Williams 2002; Ducarme *et al.* 2013) that can serve as a focal point for a campaign, or may generate revenue for conservation through wildlife or eco-tourism (Walpole & Leader-Williams 2002; Xiang *et al.* 2011).Charismatic species that are known and liked by the public are arguably more likely to generate interest and funds, and they are therefore more often featured on the covers of conservation organizations' magazines and charitable appeals (Clucas *et al.* 2008; Smith & Sutton 2008; Skibins *et al.* 2013).

Nevertheless, the insufficient data exist to quantify the amount by which the inclusion of a flagship species in a marketing campaign increases donations, if at all (Clucas *et al.* 2008; Sitas *et al.* 2009). In particular, it is feared that focusing on a single flagship species can skew priorities by implicitly implying that other species are less important (Douglas & Winkel 2014). For example, in the 1980s, the Amazonian imperial parrot (*Amazona imperialis*)—an endemic threatened species—was developed as a flagship species, while the red-necked parrot (*Amazona arausiaca*)—similarly threatened—was not. The development of the imperial parrot as a conservation flagship species unintentionally led to negative attitudes toward the red-necked parrot reflecting findings from consumer marketing psychology where comparisons of popular brands decrease public acceptance of other brands (Douglas & Winkel 2014). This unintended consequence of popularizing some species at the expense of others would be particularly concerning if it turned out that people did not actually donate more to campaigns featuring flagship appeals.

In this study, we asked how the use of (1) identifiable versus statistical beneficiaries and (2) flagship versus nonflagship species affected donations to a conservation appeal. We used a 2 × 2 design to investigate whether the identifiable victim effect extends to nonhuman species and to establish whether flagship species are more effective than nonflagship species at motivating donations.

Material and methods

This study was approved by the UCL Ethics Board under project number 3720/001. No deception was used in this study. All data were collected in March 2016 using the online labor market, Amazon Mechanical Turk (hereafter MTurk; **www.mturk.com**). See Supplementary Information) for a detailed description and justification of this method. All data and R code pertaining to this manuscript are available on Figshare (Thomas-Walters 2016).

We recruited 1,306 US-based MTurk workers (587 females; 717 males; 2 unspecified; age range = 18–75; mean = 33.2 ± 0.9) to take part in a modified Dictator Game (Kahneman *et al.* 1986), one of the simplest and most widely used economic games to measure human social behavior. The standard Dictator Game is a two-player game where one individual (the Dictator) is endowed with a sum of money and can give as much or as little as they want to the other player (the Receiver). The Receiver has no power over the Dictator allocation and has to accept any offer made by the Dictator. The Dictator's payoff-maximizing decision is to keep all the money. Nevertheless, Dictators commonly offer some of the endowment to Receivers in this game (Engel 2011), implying that behavior is often motivated by other-regarding preferences rather than narrow self-interest. In this study, the standard game was modified in the sense that the Dictators were allowed to send some of their endowment to a charity protecting animals from the negative effects of climate change, rather than to another individual.

All subjects were paid a show-up fee of $0.40 and were presented with information about the effects of climate

Table 1 Treatments and sample sizes

	Species name	Statistical	Identifiable
Flagship	Asian elephant	109	101
	Polar bear	98	99
	Tiger	101	99
Nonflagship	Dusky gopher frog	99	100
	North Atlantic cod	100	100
	Western glacier stonefly	99	101
Control		100	

Flagship and nonflagship species used in this study, as well as the sample sizes of individuals seeing statistical or identifiable victims of each species.

change on various species or, in the case of the control, the effects on the planet as a whole. Subjects were then told that the World Wide Fund for Nature (WWF) was a charity working to mitigate the effects of climate change on each species (or on the planet more generally). Subjects were given an endowment of $0.50 and presented with an opportunity to donate as much or as little of this endowment as they wished to the WWF. To guard against the possibility that subjects would perceive their donations to be insignificant, they were informed that at the end of the study one donation would be randomly selected and multiplied by 100 (i.e., a $0.50 donation could become a $50 donation). Correct answers to three preliminary comprehension questions regarding the donation rules were necessary for participation in the study. Subjects were randomly allocated to one of four experimental treatments or to a control group. The treatments varied according to whether the information subjects received included a flagship or nonflagship species, and whether the species were presented as statistical or identifiable beneficiaries (Table 1). Prior to making their donation decision, subjects were required to answer five questions to measure attitudes toward climate change (two questions), the sense of responsibility felt toward other species (two questions), and the extent to which individuals would be willing to modify their behavior to reduce negative climate impacts (one question). Answers to all survey questions were provided on a Likert scale ranging from 1 to 5, with 1 being the lowest level of acceptance/responsibility/willingness to change, and 5 the highest. Initial analysis revealed significant positive correlations between all responses, and a Cronbach's alpha score of 0.79 supported the idea that these psychometric variables were closely related (see Supplementary Information). As such, we combined the responses for each individual by multiplying the scores for each question. This dummy variable henceforth referred to as "combined survey score." At the end of the study, subjects were asked to provide demographic information (age, gender, and education level).

All experimental materials provided to subjects and subject demographics are available in the Supplementary Information.

The flagship species used in the study were selected because they had previously been featured in marketing campaigns by conservation non-governmental organizations (NGOs) and are species that are being affected by climate change. In contrast, the nonflagship species have not, to our knowledge, previously been used in a campaign by a conservation NGO but are also being affected by climate change. Each appeal in the study was accompanied by a photo of the relevant species. For identifiable beneficiaries, the criterion for photo selection was a full body shot of a single adult animal making eye contact with the camera. For statistical beneficiaries, the criterion for selection was a photo of at least three adult animals, with at least one making eye contact and one with its full body in the shot. All photos used in the study are available in Supplementary Information.

In order to determine which variables influenced the decision to donate any of the endowment ($0.50) to WWF, we set donation ($) as the response term in a generalized linear model and included the following explanatory terms: species (flagship or nonflagship), beneficiary type (identifiable or statistical), combined survey score, gender, age, education level and two-way interactions between combined survey score and species, combined survey score and beneficiary, and species and victim.

Data were analyzed using R version 3.2.4 (http://www.r-project.org). An information theoretic approach with model averaging (Grueber *et al.* 2011) was used to determine the influence of explanatory terms in the models, using the package MuMIn (Bartoń 2014). In comparison to null hypothesis testing, an information theoretic approach provides a quantitative measure of support for different hypotheses by ranking and weighting models (Burnham & Anderson 1998). By averaging across models that have similarly high levels of support, the effect size (parameter estimate), confidence intervals, and relative importance (the probability that a term is a component of the best model, Johnson & Omland 2004) of each of the explanatory terms can be calculated, while also taking into account model selection uncertainty (Burnham & Anderson 1998). Akaike's Information Criterion corrected for small sample sizes (AICc) was used to calculate the degree of support for each model. The subset of top models included the one with the lowest AICc scores, and any others that were within 2 AICc units. Following (Gelman 2008), all input variables were standardized to a common scale, which allows for the interpretation of main effects even when interactions are present (Gelman 2008).
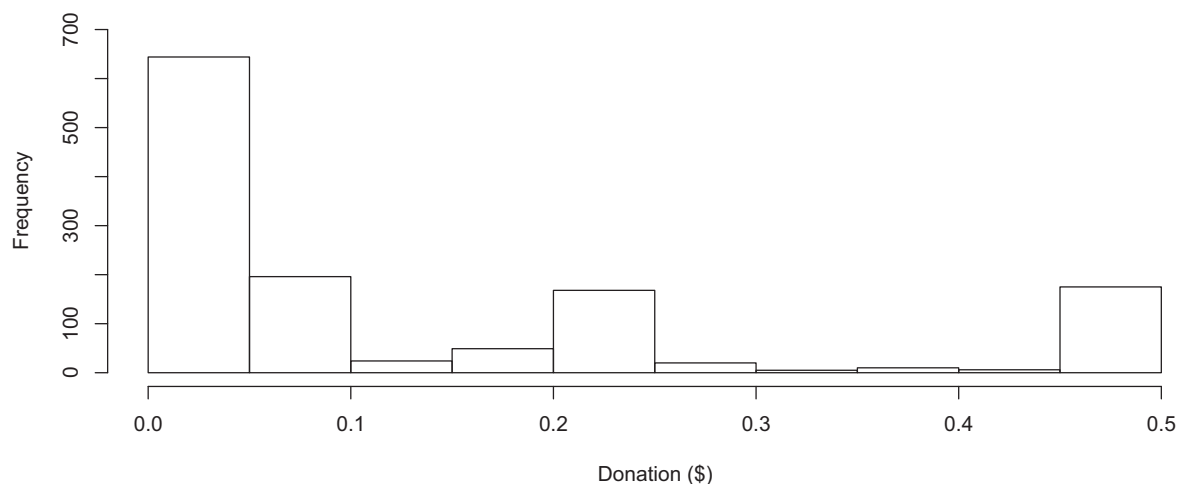
**Figure 1** Frequency barplot showing the distributions of donation amounts ($).
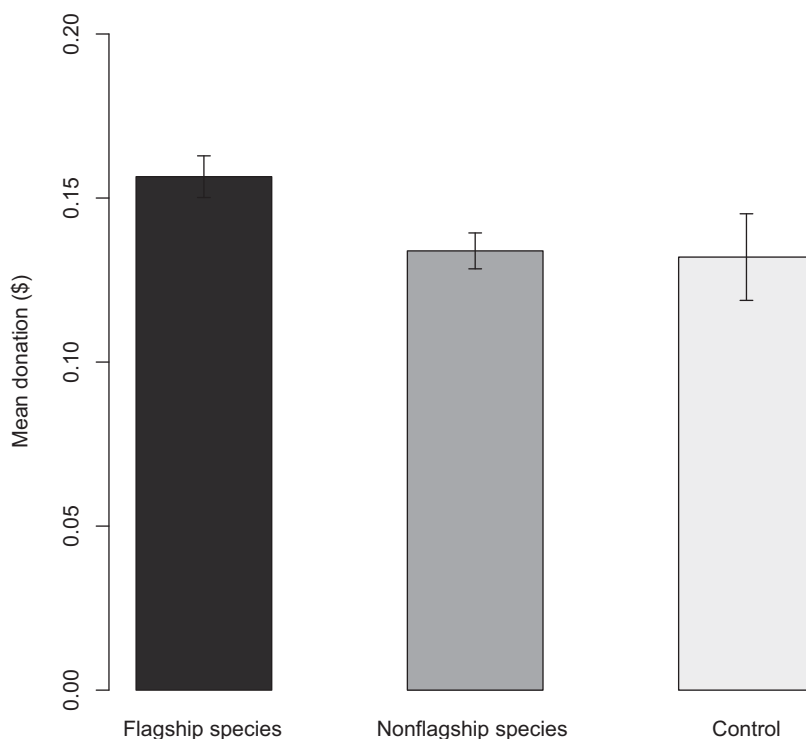
Figure 2 Donations ($) made for flagship and nonflagship species. Means and standard errors generated from raw data.

Results

Of the 1,306 subjects recruited, 872 (66.8%) chose to donate a nonzero amount to WWF. The mean donation size was $0.14 ± 0.01 (representing 28% of the original endowment) although $0.00 was the most common donation (Figure 1). The mean donation size for flagship species was $0.16 ± 0.01, compared with $0.13 ± 0.01 for nonflagship species, and $0.13 ± 0.01 for control appeals not featuring any animals (Figure 2). By comparison, the mean donation sizes for identifiable and statistical beneficiaries were more similar to one another ($0.14 ± 0.01 and $0.15 ± 0.01, respectively, Figure 3).

The main predictor of how much subjects chose to donate to the WWF in this study was the combined survey score (effect size = 0.09, 95% CI: 0.07, 0.11; Table 2). The inclusion of a flagship species in an appeal increased the donation amount (effect size for nonflagship species = −0.02, 95% CI: −0.04, 0.00; Table 2) but beneficiary type did not have a strong effect, and was not included in any
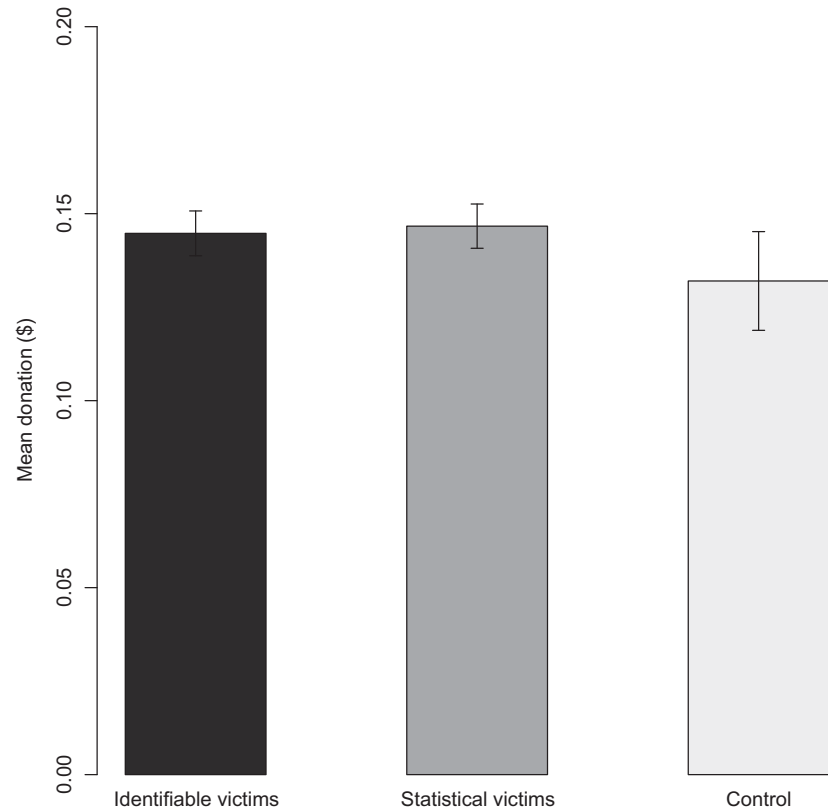
Figure 3 Donations ($) made for identifiable versus statistical beneficiaries. Means and standard errors generated from raw data.

Table 2 Effect sizes, unconditional standard errors, confidence intervals, and relative importance for parameters included in the top models investigating donation amount ($)

Parameter	Relative importance	Estimate	SE	Confidence interval
Intercept		0.15	0.00	(0.14, 0.16)
Combined survey score	1	0.09	0.01	(0.07, 0.11)
Gender (female)	1	−0.03	0.01	(−0.04, −0.01)
Species (flagship)	1	−0.02	0.01	(−0.04, 0.00)
Age	1	0.01	0.01	(0.00, 0.03)
Education level	0.75	0.02	0.01	(0.00, 0.03)
Beneficiary (identifiable)	0.17	0.00	0.01	(−0.01, 0.02)
Species: combined survey score	0.16	−0.01	0.02	(−0.04, 0.03)

For categorical variables, the reference category is indicated in parentheses. Relative importance is the probability that the term is a component of the best model (Johnson & Omland 2004). Estimates have been standardized on two SD following Gelman (2008). Standard errors are unconditional, meaning that they incorporate model selection uncertainty (Grueber *et al.* 2011).

of the top models (Table 2). Demographic variables also influenced donations: females donated larger amounts than males on average, and education level and age were also both positively associated with increased donation amounts (Table 2).

Discussion

Previous studies have suggested that the inclusion of identifiable victims can increase the salience of chari-table appeals, resulting in increased donations to that appeal (e.g., Jenni & Loewenstein 1997; Kogut & Ritov 2005; Genevsky *et al.* 2013). Nevertheless, most (if not all) studies of the identifiable victim effect have been conducted using humans as the model species and, prior to this study, it was not known whether this effect would also persist when the beneficiaries were members of a nonhuman species. Using nonhuman species as the model beneficiaries, here we found no difference in the amount donated to a conservation

appeal for identifiable beneficiaries versus statistical beneficiaries. On the other hand, our results validate the claim that people are positively influenced by flagship species in conservation appeals, and is the first analysis using actual monetary donations to do so. These results demonstrate the importance of empirically validating the methods used in charitable appeals to maximize their efficacy, and yield important and practically applicable insights for conservation organizations.

Understanding the factors motivating individual donation decisions is hugely important for charities, including those in the conservation sector. For example, in 2015, the WWF received over $98 million in the form of individual donations, representing 34% of their operating revenue in that year (WWF-US 2015). These donations are vital to the work of WWF, allowing them to tackle challenges from climate change to endangered species protection in more than 100 countries. Recognizing the importance of these donations, 10% of WWF-US's total expenses in 2015 (over $29 million) were spent on fundraising. The findings of this study can help charities like the WWF to understand how to spend fundraising money most effectively. Based on the current data, we suggest that charities could increase total revenues by using flagship species in campaigns, although it is not yet known whether donors are likely to experience compassion fade (Markowitz *et al.* 2013) from seeing the same few flagship species repeatedly highlighted in conservation appeals, nor whether the promotion of some flagship species will result in reduced concern for other species (c.f. Douglas & Winkel 2014). These are important areas for future empirical research.

It is not clear why we were unable to replicate the generally robust (Jenni & Lowenstein 1997; Kogut & Ritov 2005, but see Lesner & Rasmussen 2014; Deshpande & Spears 2016) result that people give more when donating to identifiable rather than statistical beneficiaries. One possibility is that, at least in some of our statistical victim treatments, the beneficiaries were perceived as a single cohesive group, rather than as several different beneficiaries (e.g., Smith *et al.* 2013). This perception of the group as a single entity (entitativity) would have reduced any difference in donations made to identifiable and statistical beneficiaries. However, common manipulations of entitativity are perceptual (e.g., subjects moving in unison) and conceptual (e.g., subjects described as a family) (see Smith *et al.* 2013). The majority of our photos in the statistical victim treatments did not portray unified movement, and we made no reference to family groups.

Although it is possible that this failure to replicate previous studies is an artifact of conducting the study using an internet-based sample, we do not believe this is likely for the following reasons. First, the amount given away by subjects in our modified Dictator Game was 28% of the endowment, which perfectly matches the mean donation amount that was calculated based on a recent meta-analysis of over 100 Dictator Game studies (Engel 2011). Second, broad patterns in our data also match previous Dictator Game findings, namely that donations increase with age and education level, and that females are more generous than males (Engel 2011). Such similarities support the idea that subjects taking part in our study behaved similarly to those who have taken part in other studies, including in more traditional laboratory settings. Finally, a recent study using Indian subjects recruited via MTurk showed that, at least under certain conditions, people donated more to identifiable beneficiaries (Deshpande & Spears 2016), indicating that the identifiable victim effect can be replicated in this online setting. It is noteworthy that in the previous study, Indian participants only gave more to identifiable beneficiaries when these individuals were high-caste or generic beneficiaries and not when the beneficiaries were low-caste individuals (Deshpande & Spears 2016). This illustrates that the identifiable victim effect may be somewhat context specific, rather than general. Our results suggest that one context in which this effect might be less pronounced is when the beneficiaries are nonhuman species, rather than humans. If true, this insight would have important implications for conservation appeals using non-human subjects.

Although psychological insights into human behavior are increasingly being applied to increase giving, most previous studies have focused on appeals featuring humans rather than nonhuman animals. Our findings here suggest that insights gained from work on humans cannot readily be applied to appeals featuring nonhuman animals and emphasize instead the need to empirically validate the methods that are used to generate donations across different contexts. Our study is an important first step in that direction, but there is still much to be done.

Acknowledgment

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