Testing branding techniques on species common names to improve their fundraising profile for conservation

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Alejandra Díaz-Restrepo[1], Kelvin Balcombe[2], Iain Fraser[1,3], Robert J. Smith[1] & Diogo Veríssimo[4]

1 Durrell Institute of Conservation and Ecology, School of Anthropology and Conservation, University of Kent, Canterbury, UK
2 School of Agriculture, Policy and Development, University of Reading, Reading, UK
3 School of Economics, University of Kent, Canterbury, UK
4 Department of Zoology, University of Oxford, Oxford, UK

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Correspondence
Diogo Veríssimo, 11a Mansfield Rd, Oxford OX1 3SZ, Oxford, UK.
Email: verissimodiogo@gmail.com

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Abstract

In the search for new ways to bring attention to the conservation of neglected species, marketing is increasingly recognised as offering new insights. Brand creation frameworks provide guidelines to create names or symbols for products that will differentiate them from the competition. In this paper, we examine if species common names that follow these guidelines can improve their fundraising potential. Using a novel choice experiment format that employs a budget allocation task, we evaluate if species common names influence donor preferences, where participants were given real money to donate to the species of their choosing. We model the data collected, which is fractional response data, using a Hierarchical Bayesian Dirichlet regression. Our results indicate that while all attributes are positively related to making a donation, Appeal and Familiarity coefficients are statistically significant but Name is not. There were also no statistically significant interactions between Name and any of the socio-economic variables. Our results on the importance of Appeal and Familiarity follow past research but contradict past research on the importance of common names, although the latter looked at common names in isolation. This suggests that species traits should not be tested in isolation when trying to understand the drivers of donations to wildlife conservation, as some traits that may appear important when tested separately become comparatively irrelevant when placed in a more realistic context where respondents have to consider multiple species traits. Future research into the influence of common names should investigate the possible impact of name sentiment as well as whether names with geographic references increase support from donors from those areas.

Introduction

Conservation efforts, including funding allocation and conservation research intensity, are biased towards some species (Gallo-Cajiao, Archibald *et al*. 2018; Bellon 2019). Some of these biases are driven by species traits like physical size (Metrick and Weitzman 1996), while others respond to aspects of non-human charisma, like the interaction of people with the species and the cultural context of those interactions (Lorimer 2006). As a result, some species are the focus of large amounts of conservation effort, while others struggle to gain the attention they need. A similar situation occurs with commercial markets, where marketing techniques can make a product stand out from its competitors, to create recall and preference.

Marketing techniques have already been adopted by conservationists, generating positive results by increasing fundraising for species with less physical appeal (Veríssimo, Vaughan *et al*. 2017). However, other marketing techniques like branding warrant further exploration in the context of conservation (Veríssimo, Fraser *et al*. 2014). Branding is a process for creating names or symbols to differentiate a product from its competitors (Kotler, Wong *et al*. 2005).

Traditionally, most of marketing thinking in conservation revolved around flagship species, those that have traits that are attractive to a target audience (Veríssimo, MacMillan *et al*. 2011). Previous research has investigated the importance of multiple species traits in driving donations to species conservation, from species familiarity and appeal, to conservation status and geographic distribution (Colléony, Clayton *et al*. 2017; Veríssimo, Vaughan *et al*. 2017; Veríssimo, Campbell *et al*. 2018). Yet, we have little understanding of how species common names influence conservation outcomes, despite initial evidence that their existence and

characteristics do so, at least in some cases (Carvell, Inglis *et al*. 1998; Sarasa, Alasaad *et al*. 2012; Stubbs and Shardlow 2012).

Species scientific names come from the Linnaean naming system where two Latin or Greek words specify first the genus and then the species. For this reason, scientific names are usually hard to pronounce and unfamiliar to people outside the scientific community. On the other hand, vernacular or common names emerge in response to the need for species names usability in everyday communication. Yet, they are not standardised, and a species will frequently have multiple common names, not only across multiple languages but often also within a given language (Doran 1903; Caramaschi *et al*. 2005; Stevens, Amulike *et al*. 2014). Still, the importance of common names is recognised by conservationists with, for example, bird conservationists in Australia arguing for standardisation of species English names to allow for the development of a stable species brand that can facilitate outreach around wildlife (Ehmke, Fitzsimons *et al*. 2018).

Looking at the common names of species on the IUCN Red List, Gregg, Bekessy *et al*. (2020) showed that there are wide variations in sentiment in species common names. This is not surprising. When looking at terms that repeatedly feature in species common names, terms like 'lesser', 'false' or 'killer' have a largely negative connotation, while 'great', 'golden' or 'angel' are largely perceived as positive (Gregg, Bekessy *et al*. 2020). This diversity does however mean that species common names could be a potential differentiator between species when it comes to donor preference. Karaffa, Draheim *et al*. (2012) found a relationship between species names and students support for conservation, but Blades (2020) found no difference in willingness to pay for multiple common names of the African wild dog (*Lycaon pictus*). Still, the focus of these studies on hypothetical measures, small number of species and limited respondent samples means that a wider and systematic examination of the impact of species common names is required.

Branding techniques have been successfully applied to naming products regardless of their aesthetics, building an identity that responds to the target audience needs and preferences (Kotler, Wong *et al*. 2005). As such, creating species names according to brand design principles could increase the engagement of a species with a target audience, helping less popular species gain new visibility. Even though there is no unique process to follow for brand name creation, as it differs between products, industries and audiences, there are a series of general branding steps proposed by Opatow (1985) that can be applied to species common names (Table 1).

In this paper, we examine how branded species names, those that were specifically designed to meet the principles used to create names in commercial marketing, and non-branded names influence the donation behaviour of a sample of survey respondents. The survey employs a novel type of choice experiment (CE) format to see how species attributes like appeal and familiarity, as well as branded and non-branded names, would drive the respondents' preferences. These two attributes were selected as multiple previous studies suggested that they played an important role in determining preference for species among UK audiences (Macdonald, Hinks *et al*. 2017; Veríssimo, Vaughan *et al*. 2017; Lundberg, Veríssimo *et al*. 2020).

Table 1 Adaptation of the general steps for brand name generation by Opatow (1985), to the creation of branded common names for species

Steps	Details
1 Establish the goals for the brand	Define what is the specific goal to be achieved through the name of the species
2 Evaluate restrictions regarding reading or pronunciation	Define the language of the name, take into consideration what is best for the species in terms of conservation. Consider meaningful indigenous or precedent names and ease of pronunciation
3 Define the target audience	Outline who the name needs to appeal to.
4 Designate what idea is the brand intended to convey	Determine the key concepts and ideas the name is meant to convey
5 Generate the nominee names list	Use brainstorming and focus groups to obtain a list of candidate names. Engage all relevant stakeholders
6 Select the best options	Consider trade-offs between preferences of different stakeholders
7 Check for legal clearance	Names should be unique
8 Proceed to market testing	Engage stakeholders to confirm the name is conveying the intended message

As is well known, a successful brand can be the most effective communication tool to publicise a product (Aaker 1991; Keller 2000). Accordingly, common names, as a key part of how a species is perceived, can in theory create value for the species (Zinkhan and Martin 1987) and potentially positively influence how people relate to them (Jacoby, Olson *et al*. 1971). Thus, our CE examines if the modification of species names is able to change respondents' preferences when confronted with the opportunity to donate money to enable conservation.

The specific choice task we designed asked respondents to divide a given quantity of money (a donation) between two species, and a no choice option. This method of CE implementation is especially novel in that the responses received are not simply a preference for one species versus the other but instead, it allows for respondents to express relative preferences for each pair. The appeal of this approach is that it closely mimics the type of choices a respondent is required to make in many real-world settings. This type of budget allocation problem has significant potential to extend the existing CE literature in this and other applied research areas. The main implication that follows from the budget allocation

approach is that the data generated by our CE cannot be analysed in the standard manner, that is estimating a multinomial logit model. Instead, we need to employ an econometric specification that explicitly takes account of the proportional allocation of the donation data. Within the literature this type of data is called fractional response data and given the panel nature of the CE, we have fractional response panel data as described by, for example (Papke and Wooldridge 2008) and Maier (2014). In this paper, we model our data by employing a Hierarchical Bayesian specification that draws on Maier (2014) and estimate a Dirichlet regression specification. Dirichlet models can be used to analyse bounded data that sums to a constant value and with an appropriate specification yields a model interpretation that is akin to a multinomial logit regression.

Thus, in this paper, we make two contributions to the CE literature. First, we have modified the choice task such that we derive fractional response data that means our CE data yield a relative budget share for each choice pair examined. Second, we have implemented an appropriate approach to model estimation by employing a Bayesian Dirichlet model specification.

Materials and methods

Creating common names

To explore how species names might be used as a means to enhance public perception we examined word structures and meaning, to create new species names. To guide these efforts, we employed the following principles, derived from the marketing and branding literature:

1 *Plosives:* this refers to the use of consonants B, C, D, K, G, P and T at the beginning of the brand name so as to add strength to the sound. This 'stop consonants' approach is used by Google, Coca-Cola and Kindle to create a popping sound that makes the brand linguistically stronger (Bergh, Collins *et al*. 1984; Vanden Bergh, Adler *et al*. 1987). Brands using plosives are known to obtain significantly better recognition and recall (Robertson 1989).
2 *Symbolism:* the use of words that reveal a species uniqueness, behaviour, habitat or any other attribute of the species can carry symbolic meaning which has proven to be an effective strategy in branding used to engage with a target audience (Schmitt 2012). This is how a brand can become informative with regard to the characteristics of a product, transferring meanings without the need for extensive processing (Maheswaran, Mackie *et al*. 1992; Mick 2002). For example, the common name axolotl, not only makes a link to the ancient Aztec culture but also describes the ecology of the species and its link to water (Smith 1969).
3 *Short length and pronounceability:* names with a higher number of syllables have been found to have lower levels of brand recall and recognition (Collins 1977). Additionally, names that generally had only one way to be spelt, and were easy to pronounce, had better performance influencing brand recall (Carnevale, Luna *et al*. 2017). The effect of connotation behind a name is less pronounced when the brand name is hard to pronounce (Bao, Shao *et al*. 2008).

The species names created were then used as part of a choice experiment that also included other species attributes.

Choice experiment design

The CE we designed and used in this research is novel because of the way in which respondents made choices. Specifically, unlike a standard CE which requires respondents to identify a preferred option for two or more choices, in this CE we asked respondents to donate money to species. To implement this, each respondent was given 10p (£0.1), to donate for each choice to be made. Each choice card contained two species and a neither option. Respondents were instructed to divide the budget between the options, A, B and no choice as they wished. For example, they could split the donation 5:5:0, 1:9:0, 0:10:0, 1:1:8 or 0:0:10 if donating the entire fund to the no choice option. The survey informed the respondents that these decisions would become real-life donations. In the case of selecting no choice, the survey explained that the 'owner' of the CE would choose an environmental NGO to give the donations collected to. Finally, the respondents needed to ensure that the sum of donations for species A, B and 'Neither' had to sum to 10p. On completion of the survey, we donated the corresponding amount to organisations working for the conservation of the species. With this design, we aimed to mitigate the hypothetical bias that affects similar studies that focus on willingness to pay, a metric based on behavioural intentions as opposed to actual behaviour (Kanya, Sanghera *et al*. 2019; Schmidt and Bijmolt 2020). The choice of channeling the donations through the researchers leading the survey as opposed to having respondents themselves make the donation related to the complex logistics of disbursing funds to a large number of individuals while ensuring the money is indeed donated to the relevant charities.

Next, we selected the species for the survey. We did this using a dataset of mammals previously featured in the Zoological Society of London's EDGE of Existence programme (EDGE) (https://www.edgeofexistence.org/) and which were used for fundraising purposes. We focussed on these species as while their familiarity varied substantially (Table S1) they allow us to avoid including global flagship species like the tiger, giant panda, lion or the elephant whose very high level of recognition could generate confusion among respondents if presented with unknown names. We also employed information presented in Veríssimo, Vaughan *et al*. (2017) that allowed us to construct attributes regarding species appeal and familiarity. In total, we derived three species attributes for our CE and for each attribute we defined two levels. This information is summarised in Table 2.

Given the attributes identified in Table 2, we then combined the appeal and familiarity attributes into four groups: Group 1 – appealing and familiar; Group 2 – non-appealing

Table 2 Attributes and levels for choice experiment on the impact of using branding principles to improve the fundraising potential of species common names

Attribute	Description	Levels
Appeal	Aesthetic and socio-economic aspects of non-human charisma, which accounts for the perception of a species demeanour and historical functionality for society	Appealing species Non-appealing species
Familiarity	People's knowledge of the species existence, either through contact with a live individual, or through media such as a documentary or a book	Familiar species Non-familiar species
Name	Common name adapted to comply with branding principles using plosives, symbolism, easy to pronounce and short	Branded name Non-branded name

and non-familiar; Group 3 – appealing and non-familiar; and Group 4 – non-appealing and familiar. For each group, we selected five taxonomically diverse species from the previously mentioned mammal dataset, with the goal of minimizing the number of species from the same Family in each group. Then for each of the 20 mammals selected, we developed two names, one which we defined to be branded and one as non-branded (See Appendix S1 and Table S1).

As noted, given the use of the donation as the means by which respondents expressed their relative preference for species A, B or neither, our CE did not contain a price or cost attribute. Therefore, to design the choice cards, we employed an orthogonal array (using SPSS Statistics 25) to create 12 cards with balanced levels for all attributes. Then, using the fold-over method (Louviere, Hensher *et al*. 2000) we generated cards pair such that each choice card had two generic options, that is A and B. For all choice cards we also included a 'Neither' option, allowing respondents the option to not make a donation to either animal presented. All respondents were shown 12 choice cards, leading to a budget of £1.20 per respondent. An example of the choice cards employed in this CE is shown in Figure 1.

Every choice card compared two species, from two different groups out of the four described above. While every respondent saw the same set of 12 comparisons between attributes (see Table 2), the specific species for each combination was randomly selected from the five species in each of the four groups described above.

For every species we presented the species name (branded or non-branded) an illustration, and the scientific name in small print (Figure 1). For the species display, we used illustrations like those in identification guides for animals (Scharf 2009). By using illustrations instead of photographs, we minimised differences in brightness, angle, background colour and other image variables (Hunt, 2006). Imbalances with these variables can make some images more appealing, creating a bias for the experiment (Thömmes and Hübner 2018). We decided to incorporate visuals as conservation organisations most often include some form of visuals in their fundraising appeals, a decision driven by the added ability of pictures and videos to outcompete text for attention (Yang, Li *et al*. 2020). Finally, note that both versions of a common name featured the same illustration, and so any effects of the illustration were held constant across names for a given species.

Sentiment analysis

To better understand the differences between branded and unbranded names, we measured the sentiment of branded and non-branded common names using the NRC lexicon, using the Sentimentr 2.7.1 package in R 3.6.0. This lexicon contains over 5000 words for which valence has been accessed to be either positive or negative and scored 1 or −1, respectively (Mohammad and Turney 2013). To obtain the valence of a name, the scores of all words in it are added up. As is commonly the case in these analyses, words not in the dictionary were given a score of 0 (Lennox, Veríssimo *et al*. 2020).

Survey implementation

The survey was implemented using Survey Monkey with an 'Advanced' license (www.surveymonkey.co.uk). We collected standard socio-economic data plus questions on engagement with nature, the latter section based on Lundberg, Vainio *et al*. (2019). For the engagement with nature section, we presented respondents with nine questions, each of them framed as a 5-level Likert scale response, measuring respondents' level of engagement with nature. The responses were coded from 0 to 4 and summed per respondent, to generate an overall index value ranging from zero, for low, to 36 for high. Lower index values are assumed to capture latent preferences of individuals that, for example, do not believe in the severity of climate change or who think of nature degradation as not their responsibility. By contrast, higher values represent people that believe environmental protection benefits everyone, and that it will provide a better world for them and their children.

The survey was distributed to UK residents above 18 years of age using Amazon Mechanical Turk (www.mturk.com). Each respondent was paid £0.44 to participate. See Appendix S3 for the full questionnaire.

Econometric specification

As already noted, the response data that we collected with this CE are non-standard. Essentially, the allocation of the donation means that the dependent variable can be considered as a fraction or proportion. To econometrically deal with the data as well as taking account of the choice task, we need to take account of the bounded nature of the data. That is, responses can be a proportion of the donation (d) between zero and one that is $d = \in (0, 1)$. The motivation for employing this approach comes from standard consumer

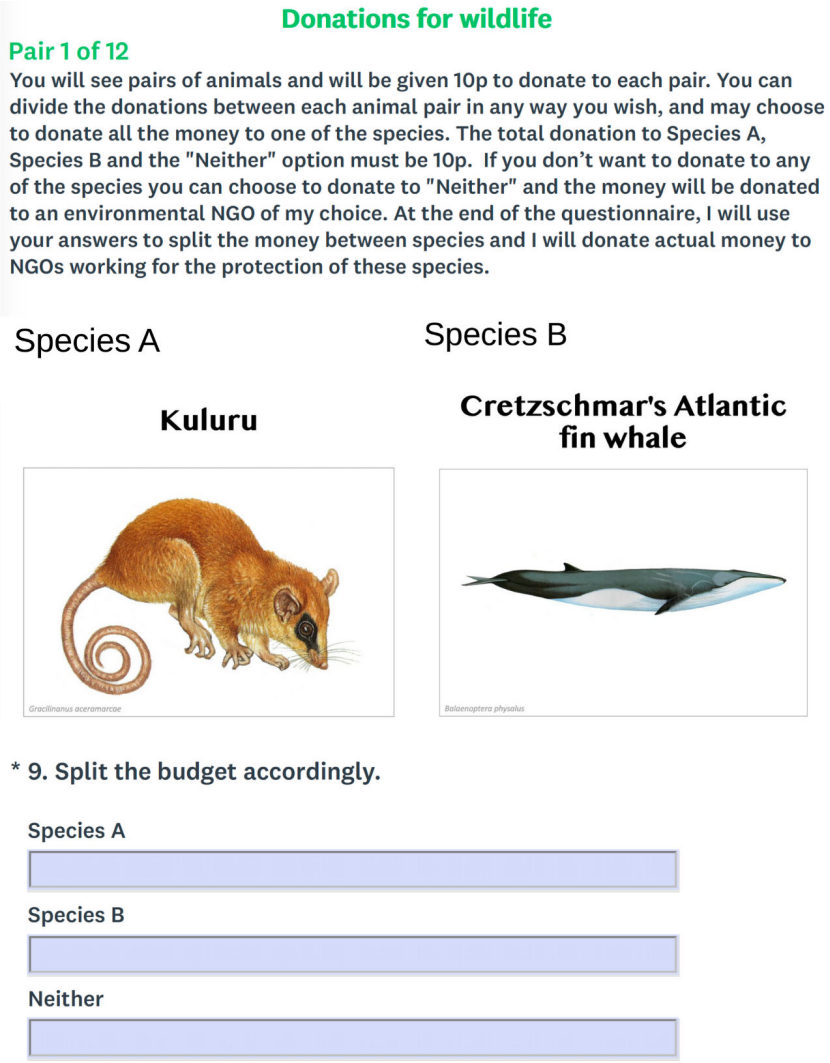

Figure 1 Example choice card for Choice Experiment on the impact of common species names.

theory where a consumer has to allocate their budget across a bundle of goods and services. In framing the choice task in this manner, we capture the typical budget allocation task that consumers undertake.

With this type of data, if we employ a standard linear regression model, we will generate meaningless estimates. It is also incorrect to employ a Tobit (see Papke and Wooldridge, 2008) because the data are not censored, values simply cannot exist outside of the unit interval when dealing with proportions. For these reasons, we need to take account of the form of the dependent variable in our analysis in terms of the statistical model we use. Another feature of the experimental data is that it is a panel. That is, we have repeated observations for each respondent $(t = 1,\ldots,12)$. Within the literature, a classic approach to dealing with fractional response panel data is the model introduced by Papke and Wooldridge (2008). In this paper, we have taken a different but related approach to modelling our data by employing a Hierarchical Bayesian specification that draws on Maier (2014) who employs a Dirichlet regression specification. The appeal of the Dirichlet regression specification is its ease of estimation within a Bayesian framework.

First, we let $y_{i,j,t}$ equal the share allocated to ith option by jth individual in the tth choice task. Next, we let $x_{i,j,t}$ be a one by four vector of attributes for (i,j,t) and z_j be a one by m vector of characteristics of the jth individual. Note that while there are three attributes in the model for this data (Appeal, Familiarity and Name), a fourth in the form of an alternative specific constant is introduced called 'No Donation' to accommodate the neither option (the opt-out) whereby a respondent takes some or all of the potential donation budget. Also, the first element of z_j is assumed equal to one such that the model collapses to one when there are no characteristics that are used as covariates to explain the preferences of respondents.

Our econometric specification proceeds by following the approach in Maier (2014) by first defining the function:

$$p_{i,j,t} = \frac{e^{x'_{i,j,t}\beta_j}}{\sum_i e^{x'_{i,j,t}\beta_j}} \quad (1)$$

where

$$\beta_{j,k} = \alpha_k z_{j,k} + e_j \quad (2)$$

where k (=*1,2,3,4*) are the attributes and e_j is an independent and identically distributed normally distributed vector with mean zero and standard deviations σ_k (= (σ_1,σ_2, σ_3, σ_4)).

The observed vector of allocations (i.e., donations) is therefore the simplex (for i = *1,2,3*):

$$Y_{j,t} = \left(y_{1,j,t}, y_{2,j,t}, y_{3,j,t}\right) \quad (3)$$

which is assumed to have a Dirichlet distribution of the form.

$$y_{i,t} \sim \text{Dirichlet}\left(y_{i,t}|p_{i,j,t}\right) \propto \prod_{i=1}^{3} y_{i,j,t}^{\theta p_{i,j,t}-1} \quad (4)$$

The priors for this model were assumed to be normal where *N(μ;σ)* denotes a normal with mean μ and standard deviation σ and *T*[>0] denotes truncation above zero. Also, *Cauchy(μ;σ)* denotes a Cauchy distribution with mean μ and scale parameter σ. These model details can be summarised as follows:

$$\theta \sim N(0;5)T[>0]$$

$$\alpha_{k,m} \sim N(0;1) \text{ for all } k = 1, 2, 3, 4 \text{ and } m = 1, 2, \ldots M$$

$$\sigma_k \sim \text{Cauchy}(0;1)T[>0:01] \text{ for } k = 1, 2, 3, 4$$

Given the scale of the parameters, the priors we have employed can be considered as being relatively diffuse and dominated by the data. It should be noted that when estimating our models, we found that more diffuse priors give very similar estimates but took considerably longer chains in order to converge. Also, for the purposes of estimation, a small donation (i.e., 1 percent) was assigned to zero donations as our Dirichlet specification cannot accommodate zero values. All donation shares were computed on this basis. Also, respondents who selected the same response for all 12 choice tasks (i.e., Option A, B or Neither) were eliminated from the data. This type of repeated option selection is typical of survey respondents who have not engaged with the survey instrument in a meaningful manner. This resulted in 71 respondents being eliminated leaving a final sample of 258 individuals. We note that 91 percent of the available budget was donated to either option A and B. Clearly, respondents showed a preference for donating to a species rather than giving the money to the 'neither' option.

In terms of model estimation, it was implemented by employing eight chains with a warm-up of 5,000 iterations followed by sampling 1,250 for each of the eight chains to yield 10,000 draws from which to characterise the posterior probability distributions. By posterior distributions, we simply mean the updated prior probability distributions for our model parameters, described above, given the sample data. The STAN (https://mc-stan.org/) code used to estimate the model is provided in Appendix S5. Graphical representations of model convergence for both mean and standard deviation of regression parameters are provided in Appendix S6. Finally, we note that it is a relatively simple exercise to recover marginal effects for this model. Details of how this is done are provided in Appendix S7.

Results

The respondent sample (n = 350) is described in Table S3 (Appendix S4). Most of our sample was male, with a mean age of 30.4 (SD=9.2), having completed A-levels or a University Degree, being currently employed, and earning yearly a mean £33 400 (SD=18 800). While those involved in conservation were a clear minority, the respondents exhibited a relatively high degree of environmental concern with a mean Environmental Index score of 3.14 (SD=0.72) out of 4.

The donation amount received by different species is described in Table S2 (Appendix S2) Our model results take the level of donation as the dependent variable and the CE attributes as the independent variables (Table 3). CE attributes include: Appealing (=1) or not (=0), Familiar (=1) or not (=0), if the species name is Branded (=1) or not (=0) and the No Donation (=1) or not (=0). In addition, we have conditioned the attributes using several of our socio-economic variables: Age (Years), Income (£000s), Gender (Female = 1, Male = 0), Environmental Membership (Mem) (Yes = 1, No = 0) and Environmental Index (Env) (0–4). In terms of sentiment, branded names had positive mean sentiment (0.18) while non-branded names had negative mean sentiment (−0.16). Yet, 21 out of the 40 names tested had neutral sentiment (i.e., a score of 0). See Table S1 for name specific scores.

All attributes are positively related to making a donation, with coefficients for the Appeal and Familiarity attributes both statistically significant. Name on the other hand had a non-statistically significant coefficient. This suggests that branding a species name with attributes like initial plosives, short length, pronounceability and symbolism does not affect the amount of donations a species receives. The alternative specific constant for the No Donation attribute is positive and statistically significant, indicating that allowing the researcher to donate the cash to an environmental NGO of their choice resulted in a share of the donation being allocated to this option.

We also examined the posterior probability distributions for the CE attributes (Figure 2). The results depicted followed the interpretation above, with the attributes Appeal and Familiarity receiving a positive share of the donation. Figure 2 also shows that although for some respondents Name does attract a positive share of the donation, for a proportion of respondents it did not, such that the posterior

Table 3 Results of regression on Choice Experiment on the influence of different species traits on donations for conservation and interactions between these traits and respondent socio-economic characteristics

Variables	Coefficient	Standard Error	pseudo *T* Value
Appeal	*0.349*	*0.027*	*12.899****
Familiarity	*0.168*	*0.023*	*7.176****
Name	*0.012*	0.023	0.499
No donation	*0.641*	*0.047*	*13.749****
Appeal × age	*−0.070*	*0.030*	*−2.301***
Familiarity × age	*−0.027*	0.026	−1.038
Name × age	*−0.029*	0.024	−1.186
No donation × age	*0.055*	0.050	1.092
Appeal × income	*−0.071*	0.057	−1.238
Familiarity × income	*−0.086*	*0.049*	*−1.755**
Name × income	*−0.001*	0.047	−0.022
No donation × income	*0.080*	0.096	0.830
Appeal × gender	*−0.028*	0.097	−0.292
Familiarity × gender	*−0.188*	*0.083*	*−2.252***
Name × gender	*−0.046*	0.080	−0.578
No donation × gender	*−0.075*	0.162	−0.462
Appeal × member	*0.011*	0.014	0.762
Familiarity × member	*−0.008*	0.012	−0.628
Name × member	*−0.001*	0.012	−0.086
No donation × member	*0.024*	0.025	0.959
Appeal × Env	*0.110*	*0.039*	*2.802****
Familiarity × Env	*0.114*	*0.034*	*3.393****
Name × Env	*0.023*	0.032	0.717
No donation × Env	*0.179*	0.065	*2.753****

Variable Member refers to membership of environmental non-governmental organisations. Variable Env refers to the score on an Index measuring environmental concern.

* Statistically significant at 10%.

** Statistically significant at 5%.

*** Statistically significant at 1%.

distribution crosses zero and hence why the mean parameter estimate for Name is considered to be statistically insignificant.

We also found several statistically significant relationships regarding the interactions between CE attributes and respondent socio-economic characteristics (Table 3). The interaction between Appeal and Age is negative, which implies younger respondents are more likely to donate to appealing species. Income had a negative interaction with Familiarity suggesting that as a species becomes more familiar, donation levels decline as respondents' income increases. We also find a negative interaction between Gender and Familiarity, implying that female respondents are more likely to donate to Familiar species. While environmental membership yields no statistically significant results our environmental index indicates that greater environmental concern is linked with a higher probability of donating based on the attributes Appeal and Familiarity, with Name remaining statistically insignificant. Finally, the interaction with No Donation (the alternative specific constant) is positive, indicating that although survey participants scored highly on environmental concern, allowing the researcher to donate the endowment to an NGO of their choice was sometimes considered to be an attractive option.

Discussion

Our results reveal that the quantity of donations can be positively influenced by species characteristics such as Appeal and Familiarity, but not Name. This means that donor support remained constant when, for example, a species such as the Pygmy loris was presented under the name Revillagigedo wet-zone slender loris. Thus, although our study rejects the hypothesis of some branding attributes on a species names have an effect on a species attractiveness to donors, it offers insights on the vital importance of mimicking real-life donation conditions and including information on the species appeal and familiarity when evaluating the importance of different names.

Positive influences on donations

As predicted by several studies, the attribute Appeal, amplified by the use of species images, was the key driver of respondents' preferences (Colléony, Clayton *et al*. 2017; Veríssimo, Vaughan *et al*. 2017; Lundberg, Vainio *et al*. 2019). Surprisingly, some studies suggest that people choosing appealing species tend to donate less than those who select less appealing species (Colléony, Clayton *et al*. 2017). Familiarity had a smaller effect although some studies highlight that it can be an important driver, especially when species are considered to be local by donors (Martín-López, Montes *et al*. 2007).

Our results showing that common names have no influence on donations for species conservation run counter to the findings of Karaffa, Draheim *et al*. (2012). This difference is likely explained by the fact that Karaffa, Draheim *et al*. (2012) did not include a visual representation of the species, which meant that the name was the only information respondents had to consider when providing information about their preferences. The inclusion of images is important as there are few instances where donations are elicited without the use of any visual elements, particularly as fundraising move increasingly online and into social media (Gallo-Cajiao, Archibald et al. 2018, Steve MacLaughlin, Duff *et al*. 2019). We recognise that visual elements compete and often outperform text when it comes to grabbing attention (Schreiner, Fischer *et al*. 2019) but expect our experimental design where we compare multiple names and keep the visuals the same to be better able to measure the influence of name in driving donations. The exception may be in situations where the effect of name is so small that it is only detectable in the absence of any other information, although in that case, for the reasons described above, this effect is not consequential in an applied context. Our results align with those of Blades (2020) who did provide pictures of its focus species, the African wild dog, and like us, found no

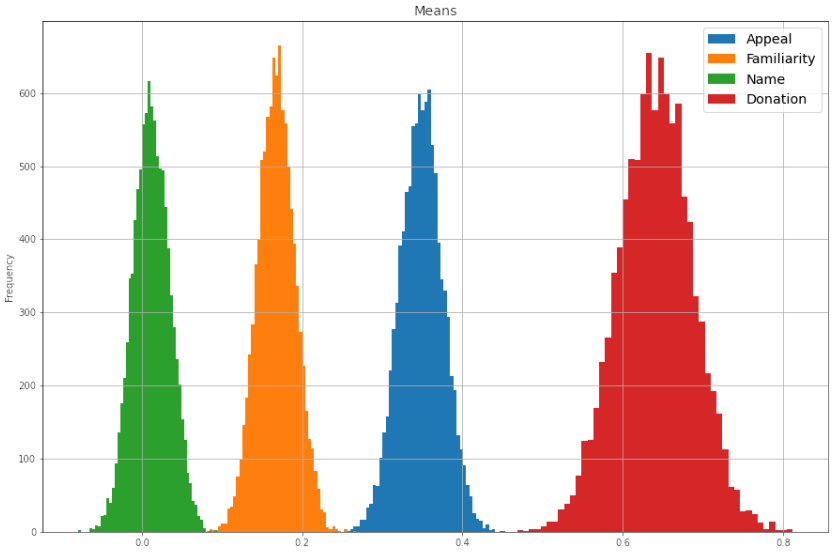

Figure 2 Posterior probability distributions for Choice Experiment attributes on the impact of common species names on conservation fundraising.

influence of different common names on the donation amount received.

There are however several areas that require further research. One is the potential influence of sentiment of the common names (i.e., whether a name has positive or negative connotations), as it has been documented that species common names can differ widely in sentiment (Gregg, Bekessy *et al*. 2020). While mean sentiment was positive for branded names and negative for non-branded names, more than half of the names did not contain any word that indicated sentiment, which suggests differences in sentiment between the two name groups were overall small. Thus, while our results suggest sentiment is likely not a strong factor behind donations to the conservation of a species, future studies should be carried out to specifically test this hypothesis. Another area where further research is needed is whether the effect of familiarity documented in this research is also present when considering location-based names, for example, would a respondent in Australia be more likely to donate to a species with a common name that included 'Australian'. Lastly, it is worth taking into account that the dictionary-based methods commonly used for measuring name sentiment have limitations (see Lennox, Veríssimo *et al*. 2020) such as not covering all relevant terms, a shortcoming that more advanced natural language processing models could help address (e.g., McDonough MacKenzie, Chang *et al*. 2020).

We also found a relationship between selecting the opt-out option, which in the case of our study leaves the experimenter to decide on the destination of the donation, and having higher concern for the environment (as measured by our environmental index), which could be explained by the kind of opt-out option used for this study, as opposed to other similar studies where this options means that no donation at all occurs (e.g., Lundberg, Veríssimo et al. 2020). Our results also suggest that those having higher concern for the environment may be more susceptible to biases towards familiar or appealing species when allocating donations between species.

Finally, it is important to recognise that our research did not cover all the benefits that could theoretically be expected from having a common name that aligns with branding guidelines. For example, branded names theoretically enjoy higher recall ability, but we did not explicitly test for this aspect as respondents were likely exposed to many of our names for the first time during the survey. It could be that in contexts where there is repeated exposure to information recall becomes important through increased familiarity. It should also be noted that in order to test the branding principles more generally, we did not focus on a very specific target audience. A more tailored approach could have yielded different results but would have also yielded less generalisable insights. It is also worth acknowledging that our sample is not representative of the UK, being younger, more educated and more environmentally concerned. This could have mitigated effects of name branding, as more informed respondents would be more likely to use pre-exiting knowledge about species, for example around conservation status, to allocate donations, therefore confounding any effect of different naming strategies. Lastly, we focussed only on mammals, which tend to have a high level of appeal and familiarity compared with other taxa, and further research will be needed to understand if our results are generalisable across other biological groups.

A novel choice experiment

The approach we have taken to designing and statistically modelling our CE is somewhat different from the standard approach typically used by researchers. The task we have developed allows respondents to share the available budget between the CE options in a manner that reflects how

consumers typically arrive at a bundle of goods given a budget constraint. In doing so, our approach makes the trade-off between the available options explicit, revealing the relative importance of the CE options being considered. There is clearly scope for future research on how to frame CE that is examining donation decisions using the method we have developed. In fact, allowing the trade-off between options in CE to be continuous as opposed to discrete potentially provides new opportunities for future research.

Following on from the new approach to CE implementation, the choice data generated are different to a standard CE in that it takes the form of fractional response data, which in turn necessitates the use of different statistical models. In this paper, we have employed Hierarchical Bayesian specification that draws on Maier (2014) and estimated a Dirichlet regression specification. This is not the only modelling approach we could use to examine this type of data and, therefore, there is a good reason to encourage researchers who undertake CE of the type used here to examine alternative estimation approaches in the future.

Conclusion

We developed a novel CE to examine whether applying branding principles to the design of a species common name influenced the willingness of donors to support a species. We found no evidence of a relationship between these factors, with species appeal and familiarity being the key drivers of donations. Yet, much remains to be studied when it comes to the role of species common names in mobilising support for wildlife conservation, from exploring methods such as eye-tracking to gain more detailed insights into donor use of different information types (e.g., Zuschke 2020), to investigating how the relationships described above play out for other taxa, such as amphibians, invertebrates or plants. We anticipate that this research will uncover similar complexity to that described in a commercial marketing context regarding brands, yet another reason why species common names need to be viewed as strategic marketing tools as opposed to simple utilitarian labels.

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References

Aaker, A.D. (1991). *What is the value of a brand? Managing brand equity.* (pp 32–46). New York: The Free Press.

Bao, Y., Shao, A.T. & Rivers, D. (2008). Creating new brand names: effects of relevance, connotation, and pronunciation. *J. Advert. Res.* **48**, 148–162.

Bellon, A.M. (2019). Does animal charisma influence conservation funding for vertebrate species under the US Endangered Species Act? *Environ. Econ. Policy Stud.* **21**, 399–411.

Bergh, B.G.V., Collins, J., Schultz, M. & Adler, K. (1984). Sound advice on brand names. *Journal. Q.* **61**, 835–840.

Blades, B. (2020). What's in a name? An evidence-based approach to understanding the implications of vernacular name on conservation of the painted dog (*Lycaon pictus*). *Lang. Ecol.* 1–27.

Caramaschi, U., de Sá, R.O. & Heyer, W.R. (2005). Common names for the frog Genus Leptodactylus. *Herpetol. Rev.* **36**, 119–120.

Carnevale, M., Luna, D. & Lerman, D. (2017). Brand linguistics: a theory-driven framework for the study of language in branding. *Int. J. Res. Mark.* **34**, 572–591.

Carvell, C., Inglis, N.F.J., Mace, G.M. & Purvis, A. (1998). How Diana climbed the ratings at the zoo. *Nature* **395**, 213.

Colléony, A., Clayton, S., Couvet, D., Saint Jalme, M. & Prévot, A.C. (2017). Human preferences for species conservation: animal charisma trumps endangered status. *Biol. Cons.* **206**, 263–269.

Collins, L. (1977). A name to conjure with. *Eur. J. Mark.* **11**, 340–363.

Doran, E.W. (1903). Vernacular names of animals. *Am. Nat.* **37**, 551–555.

Ehmke, G., Fitzsimons, J.A. & Garnett, S.T. (2018). Standardising English names for Australian bird subspecies as a conservation tool. *Bird Cons. Int.* **28**, 73–85.

Gallo-Cajiao, E., Archibald, C., Friedman, R., Steven, R., Fuller, R.A., Game, E.T., Morrison, T.H. & Ritchie, E.G. (2018). Crowdfunding biodiversity conservation. *Cons. Biol.* **32**, 1426–1435.

Gregg, E.A., Bekessy, S.A., Martin, J.K. & Garrard, G.E. (2020). Many IUCN red list species have names that evoke negative emotions. *Human Dimensions Wildl.* **25**, 468–477.

Hunt, V. (2006). Art informing science education: The potential contributions of ornithological illustration to ecology education. PhD Thesis, Louisiana State University, USA. Available online at https://digitalcommons.lsu.edu/gradschool_dissertations/1822.

Jacoby, J., Olson, J.C. & Haddock, R.A. (1971). Price, brand name, and product composition characteristics as determinants of perceived quality. *J. Appl. Psychol.* **55**, 570–579.

Kanya, L., Sanghera, S., Lewin, A. & Fox-Rushby, J. (2019). The criterion validity of willingness to pay methods: a systematic review and meta-analysis of the evidence. *Soc. Sci. Med.* **232**, 238–261.

Karaffa, P.T., Draheim, M.M. & Parsons, E.C.M. (2012). What's in a name? Do species' names impact student support for conservation? *Human Dimensions Wildl.* **17**, 308–310.

Keller, K.L. (2000). Strategic brand management : building, measuring, and managing brand equity. *J. Cons. Mark.* **17**, 263–272.

Kotler, P., Wong, V., Saunders, J. & Armstrong, G. (2005). *Product and branding strategy. Principles of marketing* (pp 555–557). Harlow, UK: Pearson Education Limited.

Lennox, R.J., Veríssimo, D., Twardek, W.M., Davis, C.R. & Jarić, I. (2020). Sentiment analysis as a measure of conservation culture in scientific literature. *Cons. Biol.* **34**, 462–471.

Lorimer, J. (2006). Nonhuman charisma: which species trigger our emotions and why? *Ecos* **27**, 20–27.

Louviere, J.J., Hensher, D.A. & Swait, J.D. (2000). *Stated choice methods analysis and applications. Stated choice methods analysis and applications* (p 134). Cambridge: Cambridge University Press.

Lundberg, P., Vainio, A., MacMillan, D.C., Smith, R.J., Veríssimo, D. & Arponen, A. (2019). The effect of knowledge, species aesthetic appeal, familiarity and conservation need on willingness to donate. *Anim. Conserv.* **22**(5), 432–443.

Lundberg, P., Veríssimo, D., Vainio, A. & Arponen, A. (2020). Preferences for different flagship types in fundraising for nature conservation. *Biol. Conserv.* **250**, 108738.

Macdonald, E., Hinks, A., Weiss, D., Dickman, A., Burnham, D., Sandom, C., Malhi, Y. & Macdonald, D. (2017). Identifying ambassador species for conservation marketing. *Global Ecol. Conserv.* **12**, 204–214.

Maheswaran, D., Mackie, D.M. & Chaiken, S. (1992). Brand name as a heuristic cue: The effects of task importance and expectancy confirmation on consumer judgments. *J. Consum. Psychol.* **1**, 317–336.

Maier, M.J. (2014). DirichletReg: Dirichlet Regression for Compositional Data in R. Research Report Series/ Department of Statistics and Mathematics, 125. WU Vienna, University of Economics and Business. Vienna. http://epub.wu.ac.at/4077/.

Martín-López, B., Montes, C. & Benayas, J. (2007). The non-economic motives behind the willingness to pay for biodiversity conservation. *Biol. Conserv.* **139**, 67–82.

McDonough MacKenzie, C., Chang, T., Nocco, M.A., Barak, R.S., Bletz, M.C., Kuebbing, S.E. & Dombeck, M. (2020). Recurrent neural network reveals overwhelming sentiment against 2017 review of US monuments from humans and bots. *Conserv. Lett.* **13**, e12747.

Metrick, A. & Weitzman, M.L. (1996). Patterns of behavior in endangered species preservation. *Univ. Wis. Press Stable* **72**, 1–16.

Mick, D.G. (2002). Consumer research and semiotics: Exploring the morphology of signs, symbols, and significance. *J. Consum. Res.* **13**, 196–213.

Mohammad, S.M. & Turney, P.D. (2013). Crowdsourcing a word–emotion association lexicon. *Comput. Intelligence* **29**, 436–465.

Opatow, L. (1985). Creating brand names that work. *Product Innov. Manage.* **4**, 254–258.

Papke, L.E. & Wooldridge, J.M. (2008). Panel data methods for fractional response variables with an application to test pass rates. *J. Econometrics* **145**(1–2), 121–133.

Robertson, K. (1989). Strategically desirable brand name characteristics. *Consum. Mark.* **6**, 61–71.

Sarasa, M., Alasaad, S. & Pérez, J.M. (2012). Common names of species, the curious case of Capra pyrenaica and the concomitant steps towards the 'wild-to-domestic' transformation of a flagship species and its vernacular names. *Biodivers. Conserv.* **21**, 1–12.

Scharf, S.T. (2009). Identification keys, the "Natural Method", and the development of plant identification manuals. *J. Hist. Biol.* **42**, 73–117.

Schmidt, J. & Bijmolt, T.H.A. (2020). Accurately measuring willingness to pay for consumer goods: a meta-analysis of the hypothetical bias. *J. Acad. Mark. Sci.* **48**, 499–518.

Schmitt, B. (2012). The consumer psychology of brands. *J. Consum. Psychol.* **22**, 7–17.

Schreiner, M., Fischer, T. & Riedl, R. (2019). Impact of content characteristics and emotion on behavioral engagement in social media: literature review and research agenda. *Electron. Commerce Res.* 1–17.

Smith, H.M. (1969). The Mexican axolotl: some misconceptions and problems. *Bioscience* **19**, 593–615.

Steve MacLaughlin, E., Duff, B., Granger, E., Perrotti, A., Thompson, G.T. & Vellake, A. (2019). Charitable Giving Report. Blackbaud Institute. Available at: www.blackbaud institute.com.

Stevens, S.S., Amulike, B., Ndaga, S., Organ, J.F. & Serfass, T.L. (2014). The confusion of common names: a methodological challenge. *Hum. Dimensions Wildl.* **19**, 191–199.

Stubbs, A. & Shardlow, M. (2012). The development of Buglife – the invertebrate conservation trust. Insect conservation: Past, present and prospects. Dordrecht, Springer, Netherlands. 9789400729, 75–105.

Thömmes, K. & Hübner, R. (2018). Instagram likes for architectural photos can be predicted by quantitative balance measures and curvature. *Front. Psychol.* **9**, 1050.

Vanden Bergh, B., Adler, K. & Oliver, L. (1987). Linguistic distinction among top brand names. *J. Advert. Res.* **27**, 39–44.

Veríssimo, D., Campbell, H.A., Tollington, S., MacMillan, D.C. & Smith, R.J. (2018). Why do people donate to conservation? Insights from a 'real world' campaign. *PLoS One* **13**, e0191888.

Veríssimo, D., Fraser, I., Girão, W., Campos, A.A., Smith, R.J. & MacMillan, D.C. (2014). Evaluating conservation flagships and flagship fleets. *Conserv. Lett.* **7**, 263–270.

Veríssimo, D., MacMillan, D.C. & Smith, R.J. (2011). Toward a systematic approach for identifying conservation flagships. *Conserv. Lett.* **4**, 1–8.

Veríssimo, D., Vaughan, G., Ridout, M., Waterman, C., MacMillan, D. & Smith, R.J. (2017). Increased conservation marketing effort has major fundraising benefits for even the least popular species. *Biol. Cons.* **211**, 95–101.

Yang, J., Li, Y., Calic, G. & Shevchenko, A. (2020). How multimedia shape crowdfunding outcomes: The overshadowing effect of images and videos on text in campaign information. *J. Bus. Res.* **117**, 6–18.

Zinkhan, G.M. & Martin, C.R. (1987). New brand names and inferential beliefs: Some insights on naming new products. *J. Bus. Res.* **15**, 157–172.
Zuschke, N. (2020). An analysis of process-tracing research on consumer decision-making. *J. Bus. Res.* **111**, 305–320.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article.