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ABSTRACT

Approaching large ungulates at protected areas is dangerous both for visitors and the animals. To promote the use of safe distances, conservationists need to be sure about which factors influence the acceptability of human-wildlife encounters. In summer 2018, we recruited a sample of 202 visitors at the Gran Paradiso National Park (Italy). They evaluated the acceptability of nine digitally modified pictures, depicting a group of visitors observing an alpine ibex (*Capra ibex*) close to a trail. Pictures were characterized in terms of group size and distance from the ibex. Observing ibexes was deemed to be acceptable if visitors were further than 25 meters from animals and when groups included less than three people. Approaching ibexes at 5 meters was always unacceptable. The Potential for Conflict Index (PCI) was constant across distance classes and it was generally low. Our findings indicate that visitors share normative beliefs about the optimal distance and group size that visitors should maintain when observing large ungulates in the park. These normative beliefs are crystallized, because previous encounters with ibexes did not affect the evaluation of each scenario and because the PCI was constant and low. We believe that behavioral interventions aimed at promoting respectful and safe human-ibex interactions can be enforced in areas where this interaction is critical, mostly in the form of panels on hiking trails introducing normative pressures on visitors and motivating them to comply with rules.

KEYWORDS: factorial surveys, vignettes, acceptability, ibex, visitors, parks

INTRODUCTION

Human-wildlife interactions are complex and sometimes become critical, leading to conflicts between wildlife populations and human activities (Woodroffe, Thirgood, Rabinowitz, 2005). Most of these conflicts involve large mammals, due to their ecology and behavior in anthropized environments, often in the form of crop damage (Bleier, Lehoczki, Újváry, Szemethy & Csányi, 2012; Schley, Dufrêne, Krier, & Frantz, 2008), attacks on humans (Löe, & Röskaft, 2004) or collisions with vehicles (Bruinderink & Hazebroek, 1996).

Negative interactions can also involve outdoor recreationists, as large mammals are iconic wildlife species that constitute major touristic attractions (Grünewald, Schleuning & Böhning-Gaese, 2016; Lindsey, Alexander, Mills, Romañach, Woodroffe, 2007; Penteriani et al., 2017b). Many people visit protected areas all around the world in the attempt to observe them in their natural habitat, for the most diverse reasons (Curtin, 2009, 2010). Unfortunately, observations are sometimes intrusive for animals and dangerous for people. Even without considering carnivores (e.g. bears Penteriani et al., 2017a), about four people got injured every year in the attempt to approach bisons (*Bison bison*) in Yellowstone (Miller & Freimund, 2017). On the other hand, when the number of tourists increases, the continuous disturbance to wildlife could directly impact upon the well-being of the focal population, disrupting daily behaviours like feeding, breeding, and resting (Holmes, Knight, Stegall & Craig, 1993; Geffroy, Samia, Bessa & Blumstein, 2015).

These negative interactions can be partially reduced by building adequate observation structures, by adopting zonation, or by fencing hiking trails (Marion, Leung, Eagleston & Burroughs, 2016). However, these solutions are hard to implement, and expensive to maintain, so they are often limited to critical hotspots. Moreover, their effectiveness strongly relies on visitor's compliance with appropriate codes of conduct, which can be violated.

Softer approaches include nudging and behavioral interventions, which exploit cognitive bias or introduce social pressures through normative messages (Halpern, 2016; Kinzig et al., 2013; Thaler & Sunstein, 2009). Nowadays protected areas regard nudging with growing interest, as it promises to make visitor behavior less impactful on the environment. For example, some parks tailor messages to particular segments of visitors (Miller, Freimund, Metcalf & Nickerson, 2018) or even experiment the effectiveness of communication on visitor behavior (Cialdini, 2003; Cialdini et al., 2006; Hockett, Marion & Leung, 2017). As our understanding of human behavior is steadily growing, there is little doubt that nudging will also become important to achieve conservation goals in protected areas, like minimizing visitor's disturbance to wildlife.

However, conservationists should not be too naive. Poorly designed behavioral interventions can be ineffective, or even counterproductive (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2018). Behavioral interventions should always be designed after an informative phase, where policymakers understand what people believe about a certain issue, why they behave in a certain way and how they would respond to a certain stimulus in a precise context (Hauser, Gino, & Norton, 2018). In the case of protected areas and human-wildlife interactions, collecting this information is of paramount importance, because most behavioral interventions were carried out in different contexts (e.g. informative panels, Saunders, Weiler, Scherrer, & Zeppel, 2019) and behavioral drivers, incentives and barriers might differ from the original case study.

Acceptability ratings are an effective, and parsimonious, way to capture individual beliefs about outdoor recreation, wildlife management, human-wildlife interactions and protected area management (Carothers, Vaske, & Donnelly, 2001; Zinn, Manfredo, Vaske, & Wittmann, 1998; Manning, 2011). They are common in human dimension research, where respondents often rate the acceptability of various issues on bipolar scales with a neutral point (Vaske, 2008). Bipolar scales enable researchers and practitioners to examine individual ratings, and, most importantly, to average them and to summarize respondents' agreement (Manfredo, Vaske, & Teel, 2003; Vaske, Beaman, Barreto, & Shelby, 2010). Acceptability ratings are also the basis for conceptualizing norms, cultural rules guiding human behavior. The return potential model (Jackson, 1965) measures how individual and group-specific acceptability ratings about a certain issue vary across a gradient of situations, for example management options with increasing levels of distress and suffering for wildlife. Traditionally, the model is represented by means of impact acceptability curves (also termed "norm curves"), where the various situations are on the x-axis and the bipolar scale measuring acceptability of the y-axis. The highest point of the curve describes the most accepted option and the amplitude of the curve measures the intensity of the norm. The agreement between respondents at each point of the curve represents norm crystallization, or how well individual beliefs about the acceptability of the specific action corresponding to that point of the curve are aligned (Vaske and Whittaker, 2004). Crystallization is extremely important for a norm to guide human behavior, as norms work through aligned empirical and normative expectations between people (Bicchieri, 2016). The potential return model was widely adopted to study crowding in outdoor recreation (Manning, 2010; Manning, Lawson, Newman, Laven and Valliere, 2002; Vaske and Donnelly, 2002), acoustic pollution in protected areas (Marin, Newman, Manning, Vaske, & Stack, 2011) and human-wildlife interactions in protected areas. Notably, Whittaker (1997) used this approach to determine the optimal number of visitors on bear viewing platforms at Katmai National Park, while Anderson, Manning, Valliere, & Hallo (2010) used it to measure the acceptable number of buses, the waiting time and the probability of bear observation in Denali National Park.

Measuring acceptability ratings can therefore shed light over the acceptability of human-wildlife encounters at protected areas, with the goal of designing effective behavioral intervention aimed at minimizing human disturbance and reducing the risk of accidents. Manning and Freidmund (2004) encouraged the use of visual-based methods to reconstruct norm curves, because they are less abstract and cognitively demanding than narrative descriptions. Miller and Freidmund (2018) adopted graphical vignettes to measure how visitors' acceptability of human-bison encounters in Yellowstone varied in function of the distance between bisons and visitors and the size of visitor groups.

In this study we aim to replicate this visual approach in a European context, by considering interactions between visitors and the alpine ibex (*Capra ibex*), an iconic ungulate characterizing many protected areas in the Alps. Being among the largest mammals in Europe, highly visible at grasslands, and often confident due to its protected status since early 1900s, ibexes are often approached by hikers. This is particularly common in the Gran Paradiso National Park (Italy), the only area where the species survived at the beginning of the last century. Here the species reaches high densities and it is particularly confident toward humans. Visitors approach ibexes to observe them and to take pictures, as they are the symbol of the park.

We will show how a common understanding of acceptable human-ibex encounters can be elicited through visual-based methods, to guide the implementation of panels targeting visitors.

MATERIALS AND METHODS

We designed a factorial survey experiment (Auspurg & Hinz, 2014), where each respondent evaluated nine pictures, representing hypothetical situations where visitors observed an adult male alpine ibex. Ibex present strong sexual dimorphism, with males characterized by a larger body mass and longer backwards-curving horns than females (Bergeron, Festa-Bianchet, von Hardenberg, & Bassano, 2008). Our vignettes depicted a lone male ibex, as encountering them is the most common form of human-ibex interaction, especially in spring when they are attracted by the new regrowth of grass in the valley bottom pastures.

As the number of visitors and their distance from wildlife were critical for the acceptability of bison observations, in a previous study carried out in Yellowstone (Miller and Freidmund, 2018), our scenarios varied in the number of visitors (1, 3 and 6 people) and in the distance between visitors and the ibex (approximately 5, 25 and 50 meters). For each vignette, a trained enumerator asked respondents to rate the acceptability of the human wildlife interaction on a 5-points bipolar ordered scale with a neutral point, ranging from "Totally unacceptable" to "Totally acceptable".

Factorial surveys are usually narrative, with each vignette describing a situation in a text. However, factorial surveys based on digital pictures can provide an extremely vivid and salient description of a hypothetical situation, especially when they depict something that can be found during a real experience. This maximizes the plausibility of a counterfactual situation, reduces the cognitive burden and improves the overall quality of vignette evaluation (Auspurg & Hinz, 2014). In our case, we photographed a portion of a trail where alpine ibex can be observed, using a boulder as a reference point. A collaborator was asked to change its distance from the boulder from 5 meters, to about 25 and 50 meters. Then, we added a male alpine ibex picture and we also varied the number of people in the group observing the ibex (Fig. 2). The number of visitors ranged between 1, 3 and 6, because these are the most common groups on the hiking trails of the park. Distances ranged between 5 and

50 meters, because creating digitally modified pictures with distances greater than 50 meters was difficult, as the ibex would have been too small, increasing the cognitive burden of respondents.
Considered that our factorial design included nine combinations only, respondents evaluated the entire range of potential scenarios. Pictures representing hypothetical scenarios were displayed in a random order, to control for ordering effects. The factorial survey included a final section collecting baseline details of respondents (e.g. age, level of education, sex, residence), as well as information how often they visited the park, their previous experience with alpine ibexes, their recreational preferences (e.g. angling, hunting, photography) and their membership of an environmental NGOs.
In July-August 2018, we intercepted a sample of visitors in three areas highly frequented by tourists in the Gran Paradiso National Park (Aosta, Italy; Fig. 1). Visitors were recruited on a voluntary basis and no reward was provided. Survey was completed with the help of an enumerator who showed the vignettes, without interacting, which took approximately 5-10 minutes to complete. A complete version of the factorial survey, altogether with the pictures is available in the Supplementary Information (S1).
We used Bayesian Generalized Linear Mixed Modeling (GLMM) with a random intercept and random slopes for each predictor, to model how various predictors affected the perceived acceptability of each scenario. Predictors included the distance between visitors and the ibex, group size, previous experience with ibexes and a dummy variable measuring whether visitors practiced naturalistic photography or not. Naturalistic photography was included as a covariate, because photographers might consider the idea of observing animals from a close distance and they can hold different beliefs about wildlife disturbance, more salient than those of common visitors. Only a few respondents practiced recreational angling, there were no recreational hunters and few visitors were members of environmental NGOs (Table 1). Therefore, these variables could not be considered in the statistical analysis. An interaction term between being a photographer, the distance from the ibex and group size was used. Our response variable measured acceptability on an ordered scale. There is no universal consensus on whether these scales should be treated as normally distributed or not, during data analysis (Bürkner & Vuorre, 2018; Liddel & Krushcke, 2017; Norman, 2010). To overcome this controversy, we compared two concurring models, one based on a Gaussian distribution of the errors and one adopting a logit link function for ordinal responses. Model selection was based on leave-one-out cross validation and the Watanabe's Akaike's Information Criterion (WAIC). Comparing these two models also enabled us to obtain insights about the overall fitness of the model, as some metrics like the R^2 or the Intraclass Correlation Criterion (ICC) can be computed for Gaussian mixed models only.
Finally, we used the Potential for Conflict Index (PCI; Vaske, 2018) to assess the level of overall agreement about the various combinations of distances and group sizes. The PCI ranges between 0, when there is complete agreement between respondents and all the answers have the same value, and 1, when there is extreme polarization and the answers are equally distributed between two opposite values of the scale. We deemed the PCI to be informative about the presence of small groups of respondents who disagreed on some particular answers.
Statistical analyses were implemented on the software R and Bayesian multilevel modeling on the STAN software, through the 'brms' package (Bürkner, 2017). GLMMs had four MCMC chains running in parallel with 5000 iterations each. A complete R script is available in S2.

RESULTS

We recruited a convenience sample of 203 visitors and we discarded one respondent, who declared himself unable to evaluate the acceptability of the scenarios. We did not record response rate. Completion rate was 94.3%; our final sample included 1723 scenarios evaluated by 202 visitors. A complete overview about the demographic characteristics of our respondents is available in Table 1.
The GLMM with a binomial error strongly outperformed the Gaussian one, in terms of WAIC (Ordered model = 2651.2 ± 81.68, Gaussian model = 3441 ± 79.67) and leave-one-out cross validation (Ordered model = 2704.28 ± 82.39, Gaussian model = 3507 ± 82.01). However, both the Gaussian and the binomial GLMM selected an identical final set of predictors, when we compared nested

models through WAIC and leave-one-out cross validation. Relevant predictors included the distance between visitors and the ibex, group size, their interaction term and the dummy variable classifying respondents as photographers or not. While the R^2 and the ICC could not be computed for the final binomial model, their value for the Gaussian model indicated that the best model explained a good portion of variability in the data (R^2=0.75 ± 0.10) and had an intermediate correlation between observations (ICC=0.61, 89 % HDI = 0.57-0.66; between group variance = 0.51, 89 % HDI = 0.42-0.66).

Respondents believed that interactions between humans and ibexes were acceptable only when the distance was greater than 25 meters. However, acceptability decreased for larger group of hikers: even when the group of people was at 50 meters from the ibex, at an acceptable distance, the situation was deemed to be unacceptable if there were more than three visitors. Observing ibexes at 5 meters was always deemed unacceptable, regardless of group size (Fig. 3). Being a naturalistic photographer made respondents slightly more likely to rate a scenario as unacceptable (Table 2). The Potential for Conflict Index was similar, and relatively low, for all the combinations of distances and group size (Table 3).

DISCUSSION

This research shows how a factorial survey based on manipulated digital pictures can help understanding human-wildlife interactions at protected areas; it confirms the findings of Miller and Freidmund (2018) for a European context and it gives some cues on how to design behavioral interventions to reduce wildlife disturbance by hikers.

Our findings indicate that visitors hold encouraging perspectives about their potential interaction with alpine ibexes. Acceptable ibex observations are those occurring at more than 25 meters of distance and involving very small groups of visitors, with no more than three people. The most appropriate way to observe an alpine ibex is deemed to be one involving a single person who observes them at 50 meters of distance, or more. Moreover, visitors deemed it totally unacceptable to approach ibexes at a close distance. These results are corroborated by the relatively constant, and low, value of the Potential for Conflict Index, which reflects the lack of isolated groups of visitors with different perspectives about the acceptability of human-ibex interactions. The lack of groups with different beliefs will facilitate future conservation actions, as small groups of non-compliers are often critical for the effectiveness of management interventions.

When individual acceptability ratings are shared and crystallize around a common position, they pave the ground for the emergence of social norms, powerful informal institutions governing collective behavior (Bicchieri, 2016; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2018), which are a prerequisite for many behavioral interventions. Leveraging on social norms can be an effective way to activate or inhibit human behavior (e.g. through information campaigns and panels, Kinzig et al., 2013). We believe that this might be the case for our study: overall, respondents shared common perspectives and a low disagreement on how wild ungulates, like ibexes, should be observed. The Alpine ibex is a charismatic mammal, which is now common and easy to approach at many protected areas in the Alps. Therefore, our results could be useful for managers of areas where the interaction between ibex and tourists is perceived as a problem. Managers could enforce measurements aimed at promoting optimal distances for the observation of this species, especially at those hotspots where people are likely to approach animals. A potential intervention might include setting up panels at those hotspots. Panels can provide visitors with a normative statement, informing them that, according to our study, visitors from the Gran Paradiso National Park believed that ibex should be observed by a maximum of three people from at least 25-30 meters. This simple statement, could be a practical way to awake injunctive norms and to stimulate visitors to maintain a respectful distance from animals.

We believe that future studies should test these panels in the field, with the ultimate goal of measuring, and eventually improving, their effectiveness. Field experiments should include experiments about the graphical layout, as well as about the information conveyed by the panel (Saunders, Weiler, Scherrer & Zeppel, 2019). It would also be interesting to see whether some priming, like human eyes

(Nettle, Nott & Bateson, 2012), increases visitors' compliance with the panel. Future research should also focus on how visitors' psychological traits influence the acceptability of human-ibex interactions, by combining our graphical factorial surveys with psychometric scales measuring visitors' beliefs about human-wildlife encounters, basic human values, wildlife value orientations, emotions (Jacobs, 2012), perceived risks and safety concerns related to wildlife observation (Gstaettner, Rodger & Lee, 2017). Due to constraints imposed by field administration, we did not explore them in this research, but considering their role over visitor's behavior it will be important to gain a deeper understanding of human-wildlife interactions and to use such understanding to better manage encounters between visitors and large mammals. For example, value orientations are a major antecedent of human attitudes and behavior towards wildlife (Jacobs, Vaske, Teel & Manfredo, 2018). The whole wildlife value orientation (WVO) scale includes 19 items (Manfredo, Teel & Henry, 2009). In this research we did not use it, as we deemed it to have an excessive length for our field conditions, where only few minutes were available for questionnaire completion. However, future studies, might assess how WVO affect the evaluation of human-wildlife interactions, with the goal of tailoring communication panels or to optimize communication campaigns, targeting different segments of visitors (Miller, Freimund, Metcalf & Nickerson, 2018). The effect of perceived risks could also be measured, either through a psychometric scale reflecting visitors' perception of the risks associated with approaching large ungulates, and by creating digitally modified pictures representing environmental settings with different levels of safety (e.g. a large grassland versus a tight hiking trail). Finally, future studies should also consider how the acceptability varies for longer distance intervals, to explore the entire norm curve and to find distances associated with the maximum degree of acceptability. These studies should nevertheless be carefully designed and piloted, because the interpretation of longer human-wildlife distances from digitally modified pictures might be unclear.

It is interesting to note that being a photographer was a predictor that was retained in our final model. On average, visitors who were naturalistic photographers had lower scores for the acceptability of the various vignettes. This could have happened because photographers are a specialized segment of recreationists, who can be aware of wildlife disturbance. Despite this awareness, some photographers are a source of stress for wild animals, as they approach them to take pictures. Behavioral interventions targeting them can be particularly important and beneficial and, it could be useful to identify role models or "positive deviants" within the community of photographers, to enforce communication campaigns promoting a safe and respectful photographic activity.

Future studies should replicate our approach at different protected areas, during different seasons and even for different human-wildlife interactions, for example by considering encounters between visitors and deer species. We believe that this approach would be a test for the applicability of our findings, which are based on purposive sampling. As no information about the demographic composition of the visitors of the Gran Paradiso National Park was available, we did not adopt random sampling and we carried out purposive sampling, recruiting visitors on the hiking trails directly. Although we used a randomized design, with a high internal validity, the use of purposive sampling might affect the generalizability of effect sizes over different segments of visitors. Extending our method to different cohorts of visitors at other protected areas could enhance, although not systematically, the robustness of our findings. Although we covered the most visited hiking trails, in the southernmost portion of the park, future studies might replicate our approach at different hiking trails in the study area. Even if there is no baseline information about park visitors, this might contribute to intercepting different segments of visitors.

CONCLUSIONS

This study confirms that graphical factorial surveys based on digitally modified pictures can be an effective way to understand visitors' acceptability of human-wildlife interactions at protected areas. While these type of study is relatively common in Northern America (Anderson, Manning, Valliere, & Hallo, 2010; Miller & Freimund, 2018), our research was arguably the first one in a European context and we believe that researchers could use it as a blueprint for measuring the acceptability of different human-wildlife interactions in Europe.

Our findings show that visitors of a large protected area in the Italian Alps have normative standards governing how they approach large mammals when hiking. In plain terms, they have precise standards for defining whether observing wildlife is appropriate, given a certain distance or a certain number of people. The existence of these standards paves the ground for many behavioral interventions, like panels with normative statements, aimed at improving outdoor recreation while reducing negative effects of human-wildlife interactions.

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Table 1. Characteristics of our sample of respondents and acceptability scores for each situation described in the vignettes.

Variable	Value
Age (mean ± sd)	37.20 ± 11.7 years
Sex	Female: 53.4% Men: 46.1% Unspecified: 12,5%
Level of education	Secondary school: 9% High school: 51.6% University degree or higher: 39.4%
Frequency of park visits.	First time: 27.5% Second time: 1% Once per year: 33.2% Multiple times per year: 34.2% Multiple times per month: 2.6% Once per week: 0.5% Multiple times per week: 1%
Previous encounters with ibexes.	Never: 46.1% Once: 11.4% Twice: 3.6% Sometimes: 28% Often: 10.9
Status: alone or not	Alone: 3.6% In company of one, or more, people: 96.4%
Recreational hunter	No:100%
Recreational angler	Yes: 2.1% No: 97.9%

Photographer	Yes: 39.9% No: 60.1%				
Member of an environmental NGO	Yes: 2.7% No: 97.9%				
Acceptability of the situation described in the vignette (overall)	Totally unacceptable	Somehow unacceptable	Neither acceptable nor unacceptable	Somehow acceptable	Totally acceptable
Overall	13.9%	31.6%	12.5%	41.1%	0.9%
1 visitor at 5 meters from the ibex	26.5%	40.2%	8.5%	23.8%	1%
1 visitors at 25 meters from the ibex	4.2%	22.3%	11.4%	61.1%	1%
1 visitors at 50 meters from the ibex	2.1%	15.8%	4.2%	75.8%	2.1%
3 visitors at 5 meters from the ibex	30.8%	43.8%	7.7%	17.2%	0.5%
3 visitors at 25 meters from the ibex	4.7%	23.9%	19.8%	50.5%	1,1%
3 visitors at 50 meters from the ibex	3.2%	20.8%	14.3%	60.1%	1.6%
6 visitor at 5 meters from the ibex	38.6%	42.8%	4.1%	14.4%	0%
6 visitors at 25 meters from the ibex	7.4%	44.5%	20.4%	27.2%	0.5%
6 visitors at 50 meters from the ibex	7.2%	29.9%	22.2%	40.2%	0.5%

Table 2. Output of the Generalized Linear Mixed Model. The model has a random intercept and slope for the covariates: the distance between visitors and the ibex and the group size of visitors. Distance and group size are treated as Helmert contrasts.

Group-level effects						
Variable	Estimate	Estimated Error	Lower 95% CI	Upper 95% CI	Eff. Sample	Rhat
sd (intercept)	3.29	0.24	2.84	3.79	1910	1.00
sd (Distance: 25 m)	1.42	0.15	1.14	1.73	2573	1.00
sd (Distance : 50 m)	0.72	0.08	0.58	0.88	2697	1.00
sd (Group size: 3 people)	0.45	0.13	0.19	0.71	2408	1.00
sd (Group size: 6 people)	0.51	0.07	0.37	0.66	2414	1.00

cor (Intercept, Distance: 25m)	-0.31	0.10	-0.49	-0.09	4819	1.00
cor (Intercept, Distance: 50m)	-0.22	0.11	-0.43	0.01	5392	1.00
cor (Distance 25m, Distance: 50 m)	0.88	0.06	0.75	0.97	2585	1.00
cor (Intercept, Group size: 3 people)	0.15	0.21	-0.28	0.56	11492	1.00
cor (Distance 25m, Group size: 3 people)	-0.19	0.22	-0.60	0.24	6000	1.00
cor (Distance 50m, Group size: 3 people)	-0.14	0.22	-0.55	0.30	6357	1.00
cor (Intercept, Group size: 6 people)	-0.14	0.14	-0.41	0.12	7886	1.00
cor (Distance 25m, Group size: 6 people)	-0.13	0.14	-0.40	0.15	3772	1.00
cor (Distance 50m, Group size: 5 people)	0.01	0.15	-0.28	0.29	3341	1.00
cor (Group size: 25m, Group size: 50 m)	0.72	0.16	0.32	0.94	1783	1.00
Population-level effects						
Variable	Estimate (log-odds)	Estimated Error	Lower 95% CI	Upper 95% CI	Eff. Sample	Rhat
Intercept [1]	-5.22	0.38	-6.00	-4.51	1568	1.00
Intercept [2]	-0.58	0.32	-1.22	0.04	1421	1.00
Intercept [3]	0.95	0.32	0.30	1.56	1394	1.00
Intercept [4]	10.43	0.68	9.16	11.82	2922	1.00
Distance: 25 m	1.96	0.15	1.67	2.27	3309	1.00
Distance: 50 m	1.03	0.08	0.87	1.20	3810	1.00
Group size: 3 people	-0.48	0.09	-0.65	-0.30	9934	1.00
Group size: 6 people	-0.64	0.06	-0.77	-0.52	5496	1.00
Being a photographer	-0.33	0.48	-1.29	0.60	1220	1.00
Distance 25 m; Group size: 3 people	0.09	0.09	-0.10	0.27	18142	1.00

Table 2. Potential for conflict Index for each situation described in the vignettes

		Group size		
		1 people	3 people	6 people
	5 meters	0.32	0.25	0.23
	25 meters	0.26	0.23	0.22

Distance between visitors and the ibex	50 meters	0.21	0.26	0.24

Figure captions

Fig.1. Map of the study area: Gran Paradiso National Park boundaries, sampling locations, roads, villages and administrative boundaries.

Fig.2. Example of three vignettes, depicting o group of 6 visitors approaching an alpine ibex at 5, 25 and 50 meters.

Fig. 3. Acceptability of the various scenarios: interaction between distance and group size (upper panel), marginal effect of distance (bottom-left panel) and marginal effect of group size (bottom-right panel). Acceptability is expressed as the marginal effects of the GLMM. Each value on the x-axis has 5 points, representing the points on the ordered scale, from "Totally unacceptable" to "Totally acceptable". On the y-axis, there are the predicted probabilities for each option, ranging from 0 to 1. The plots show how the predicted probabilities of each point of the scale change, for different values of the covariates.