Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 45

3

Broadening the Aperture on Coexistence with Wildlife through the Lenses of Identity, Risk and Morals

MICHELLE L. LUTE AND MEREDITH L. GORE

PROOF

Shifting conservation narratives from a conflict-based frame to one of coexistence minimally requires addressing human–human conflict (HHC) over how to manage wildlife in addition to direct human–wildlife conflict. HHC undermines efforts to achieve human–wildlife coexistence because social conflict focuses on the symbolic nature of a species and contests over property rights, urban-rural divisions, government authority, cultural hegemony, livelihood preservation and other often historically rooted identity clashes. HHC can prevent decision-makers and stakeholders from directly addressing the root causes of negative human–wildlife interactions and cooperating on shared goals and impacts. Like many communities across the globe, conservation communities are diversifying. Although diversity can be and is celebrated in wildlife conservation, it also can and is introducing new challenges for democratic decision-making. A common thread linking many of these challenges is the need for decision-makers to sufficiently consider the perspectives of diverse stakeholders. When stakeholder perspectives are rooted in differing values, for wildlife in our case, policies that find a satisfactory middle ground or compromise between values are often difficult if not potentially impossible to find (Nie 2003). Consider for instance the value-driven conflict over whether or not to hunt a particular species. Stakeholders who believe that someone's desire for a fur, trophy or unique hunting experience does not outweigh the intrinsic value of life will likely not change their position against hunting. Other stakeholders may contend that maintaining their hunting traditions outweighs the value of an individual animal's continued existence. What policy could possibly address both stakeholders' values and how would such a policy be developed?

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 46

In response to impossibly opposing public policy preferences, decision-makers, wildlife managers, human dimensions scholars and facilitators often turn to process, especially in the United States and other developed nations (Madden & McQuinn 2014; Lute & Axelrod 2015). In theory, if decision processes are considered broadly inclusive, fair and transparent by those holding a stake in the decision, decisions will last and not be overturned by a judge, voters or executive order by a new administration (Bruskotter et al. 2014; Manfredo et al. 2017a). Importantly, according to process proponents, the stakeholders in the aforementioned example do not need to find a true compromise. Instead, they need to work together in equitable decision-making roles or as advisors to whomever the ultimate decision-makers are. Involvement and contribution to the decision can produce stakeholder buy-in for the final decision (Wilson 2008; Wilson & Bruskotter 2009).

Although support for engagement-based proper process in stable decision-making has been documented in practical settings (e.g. De Vente et al. 2016), contentious wildlife-related policy, for instance, often defies what process proponents might expect. In the United States, in states such as Wisconsin, New Mexico and Washington, hunters, ranchers and wolf advocates, for example, have not accepted rulemaking regarding where and how wolves may be hunted and killed (e.g. Associated Press 2013; Oosting 2013). These case studies exemplify how extreme HHCs are often well described as value-based conflicts, seeming to suggest there is little to no room for common ground, or coexistence. In extreme HHC cases where process is limited in its ability to alleviate fundamental value-based differences, alternative and interdisciplinary approaches may provide a path forward because value change is rarely achievable (Manfredo et al. 2017b). For example, risk and decision science introduces mechanisms to promote risk-mitigating behaviours. Coupled human and natural systems inquiry focuses on negative interactions between humans and nature (e.g. climate change). Regardless of the informing discipline, interventions that focus not on values but perceptions (e.g. related to risk), behavioural intentions or behaviours are more likely to succeed in moving along the continuum from HHC to coexistence.

This chapter explores HHC using principles from morals, risk and human–nature interactions. We explore identity (i.e. affiliation with groups of like-minded individuals), risk perception (i.e. judgements related to harm) and moral judgements (i.e. intuitions about right and wrong) in an effort to advance understanding about the psychology of

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 47

morally relevant behaviour as well as mechanisms for encouraging positive relationships between humans and their environment, from restoration of habitat and wildlife populations to reducing greenhouse gas emissions. Can societies find compromise in collectively deciding what reasons justify killing particular animals in particular contexts? What level of risk is as low as reasonably acceptable? Herein, we argue for further exploration of the three considerations of identity, risk perceptions and moral judgements and an integrated understanding of how they interact in regards to HHC over wildlife conservation. We discuss each of these considerations separately and then how they interact to influence coexistence-based conservation behaviours, which can range from tacit tolerance of the presence of carnivores to active support in the recovery and reintroduction of species to historic and appropriate habitats (for various definitions of coexistence, see e.g. Carter & Linnell 2016; Frank 2016). We operate under the assumption that encouraging coexistence behaviours facilitates stakeholder cooperation with policies and processes that move HHC along the conflict-to-coexistence continuum in the contexts where and when it is appropriate. The appropriateness of a particular property for human-wildlife coexistence where humans and wildlife share space, as opposed to land sparing where humans and wildlife are kept separate, is a question unto itself and a topic for another chapter (see Chapter 1). After we discuss the three separate considerations of identity, risk perceptions and moral judgements, we discuss how each consideration potentially interacts to influence coexistence behaviours. We conclude with recommendations for next steps in research and application.

PROOF

3.1 COEXISTENCE CONSIDERATION 1: IDENTITY

By distilling patterns in stakeholder diversity of opinion, social identity helps researchers categorize, predict and understand differing perspectives and policy preferences (Tajfel & Turner 1979). Identity starts at the individual level where a person self-categorizes with a group that holds the person's same values and beliefs. This group affiliation in turn influences the individual's perceptions and behaviours. When identification with a particular group is strong, group norms strongly influence the individual's world-views, policy preferences and behaviours (Giannakakis & Fritsche 2011). Group norms also contribute to what identity researchers call in-group bias, whereby individuals emphasize positive in-group (i.e. those with which the individual identifies and affiliates)

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 48

characteristics and negative aspects of out-groups (i.e. those perceived as different from the individual) in such a way as to result in a preconceived judgement about out-group members (Sherif 1967; Labianca et al. 1998). It is through group membership and in-group bias that we can start to understand certain elements of the tribal loyalty that defines many intergroup conflicts and cultures clashes. Social identity theory has been used to understand intergroup conflict in many contexts, from racial and gender bias to power dynamics between pilots and flight attendants (Navarrete et al. 2010; Ford et al. 2012). In the case of HHC about wildlife, relevant identities could include hunters, nature lovers, outdoor enthusiasts and property rights advocates (Lute & Gore 2014; Lute et al. 2014). Social identity theory suggests that in-group members share salient values, which have been shown to influence attitudes, preferences and behavioural intentions related to wildlife and wildlife management (Sponarski et al. 2015). Social trust of risk managers can mediate the relationship between salient values and attitudes (Sponarski et al. 2015). Therefore, measuring identity can enhance understanding of the salient values at play and predict policy support in the context of HHC.

3.2 COEXISTENCE CONSIDERATION 2: RISK PERCEPTIONS

Differing perspectives among identity groups may be influenced by risk perception. Risk perceptions are value-laden judgements about one's likelihood of harm and include both affective (i.e. related to intuitive feeling states; see Chapter 4) and cognitive (i.e. related to thinking through information) dimensions (Sjöberg 1998; Lazo et al. 2000; Lindquist et al. 2006). Researchers employing the psychometric paradigm to investigate cognitive elements that affect individuals' risk perception (Slovic 1987) utilize seven factors that influence people's risk judgements about nature: certainty, control, frequency, naturalness, seriousness, responsiveness and trust (Rogers 1975; Slovic 1987; Sjöberg 1998; Gore et al. 2007). The latter two factors, responsiveness and trust, refer to the managers that help mitigate or address risk and decision-makers that craft policy related to risk. Including affective risk perception (i.e. feelings about a source of risk, which can be described as dread, fear or worry) may enhance understanding of the risk perception–behaviour relationship because cognitive components only provide partial explanations (Rivers & Arvai 2007; Wilson & Arvai 2010). Risk perceptions are not only emotional but also experiential. The role of

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 49

experience in wildlife-related risk can augment HHC through experiences that induce fear (e.g. lost a companion animal to a carnivore) or, for example, frustration from past risk management (e.g. wildlife managers were considered unresponsive).

Risk perceptions are important for understanding human interactions with nature, particularly wildlife that may transmit disease or carnivores that may pose threats to the health and safety of livestock and companion animals (Riley & Decker 2000; Gore et al. 2009; Johansson & Karlsson 2011). The environmental justice literature suggests that moral indignation over the asymmetrical nature of many if not most risks is in part due to issues of fairness, or a lack thereof (Earle & Siegrist 2008). The risk literature has contributed important knowledge about risk-related decision-making, politics, communication and pro-environmental or risk-reducing behaviours to cases such as pollution near low-income neighbourhoods or in common pool resources (Hatcher et al. 2000; Jurin et al. 2010). Whether the risk is contaminants in drinking water, or rabid raccoons in the backyard, risk perceptions and other perceptions that relate to risk (e.g. moral judgements such as fairness) can influence HHC more than technical risk assessments and are therefore critical to address when trying to move from conflict to coexistence.

PROOF

3.3 COEXISTENCE CONSIDERATION 3: MORAL JUDGEMENTS

Differing perspectives among identity groups include judgements of right and wrong. Moral judgements assess right or wrong and, similar to risk perceptions, include intuition, involve uncertainty and vary by individual (Schwartz 1968; Amit & Greene 2012). Moral Foundations Theory (MFT) was developed to explain how people come to hold their intuitions about right and wrong, and seeks to explain both the diversity and unity of moral judgements that can exist between individuals and among cultures (Haidt 2007; Graham et al. 2011, 2013). The theory posits the existence of at least five innate, universal moral categories: authority, harm, fairness, loyalty and purity (Haidt & Joseph 2004, 2007). These categories are then elaborated or attenuated based on one's experiences and culture, thereby creating the unique moralities we see within and between groups and societies (e.g. generally that conservatives emphasize respect for authority; liberals emphasize fairness).

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 50

Importantly for HHC, moral foundations researchers emphasize the primacy of gut-level moral intuitions over conscious declarative moral reasoning in how people come to their decisions about policy, politics and morality. Here, moral judgements are made as a result of pre-existing intuitions (reviewed in Haidt 2012). Researchers have demonstrated a compelling empirical case for the usefulness of conceptualizing moral judgement as composed of basic, intuitive foundations that predict a wide range of political concerns relevant to wildlife management (e.g. treatment of animals and appropriate behaviour within social groups; Haidt 2007; Graham et al. 2011, 2013).

3.4 INFLUENCES OF IDENTITY, RISK PERCEPTIONS AND MORAL JUDGEMENTS ON BEHAVIOUR

All of these differing perspectives based on identities, varying risk perceptions and individual moral judgements result in different behaviours, ranging from intolerance for the presence of wildlife to active protection of species and their habitats (Lute & Gore 2014; Lute et al. 2016). These myriad considerations may complicate efforts to predict coexistence behaviours but can help researchers understand motivations for actions that can have significant effects on wildlife populations, such as environmental crimes and intentional non-compliance with policies (Gibbs et al. 2009; Gore et al. 2013). Greater understanding of these considerations and their combined effect on behaviour can help enable coexistence among diverse stakeholders, thereby assuage HHC by moving people towards the same conservation goals, and further towards the coexistence side of the continuum.

Although the relationship between risk perception and behaviour is well-studied in different contexts (Liao et al. 2009; Dohmen et al. 2011), empirical knowledge of how risk perception and behaviour are influenced by moral judgements is virtually non-existent (Sjöberg & Winroth 1986; Sjöberg 2000). The moral aspects of risk (e.g. whether asymmetrical exposure to risk disadvantages a group of people) may be important in judgements of whether a risk is acceptable and moral values related to risk are the subject of public debate and political action (Sjöberg & Winroth 1986). Some researchers have expanded the psychometric paradigm of risk perception to include moral aspects of risk, which highly correlates with acceptance of risk among diverse individuals and cultures (Sjöberg & Winroth 1986). Moral aspects of risk may apply to justice or fairness about risk, which can also relate to risk managers. For example, stakeholders who live near and fear wolves consider

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 51

reintroduction efforts unfair (a moral judgement that reintroduction actions are wrong) because they are exposed to a risk that others are not and the risk is sometimes considered out of their control and unnatural (brought by people). The asymmetry and emotional dimensions of a risk combined with the psychometric factors of control and naturalness can result in mistrust (another factor in the psychometric paradigm of risk) of decision-makers and managers that created and implemented policies to reintroduce the large carnivore species.

Specific moral intuitions may also relate to risk perceptions that influence behaviour. Moral concerns about harm/care in relation to humans may lead to heighted perceptions of risk posed by an element in nature (e.g. hurricanes, tigers) to those humans. On the other hand, if nature is seen as something requiring protection (e.g. an endangered or rare species), concerns about decreasing harm of nature may be more salient (Lute et al. 2014). Other studies have used disgust (i.e. the opposite of purity) to explain fear of various animals (Johansson & Karlsson 2011). Intuitions about authority and in-group loyalty may influence risk perceptions via social norms (Lute & Gore 2014). For example, a person may judge their own level of risk related to natural disasters based in part on risk perceptions of respected authorities or other identity group members and their ability to help respond to risks (e.g. government assistance in the form of food supplies and temporary shelter). Lastly, if what is considered fair is more acceptable to a person, s/he may view natural risks as more acceptable and less threatening than unnatural risks that are man-made. Consider, for instance, a situation in which farmers seem to accept the natural albeit unpredictable and potentially significant risks posed by weather but strongly object to exposure to less likely risks posed by federally protected carnivores (Nie 2002, 2003a). Fairness may explain – in concert with certainty, control and other psychometric factors – such differences in risk perception because the presence of carnivores is seen as an unfair situation created by centralized governments more concerned with other interests than those of the local farmer (Skogen & Krange 2003; Naughton-Treves et al. 2003).

Because moral intuitions and risk perception may relate to each other and are important for predicting myriad human behaviours (Slovic 1987; O'Connor et al. 1999), exploring the relationships between moral intuitions, risk perception and behaviour in a single causal model may provide a more comprehensive account of human judgements according to context and natural resource-related behaviour (see Text Box 3.1). Accordingly, we propose a conceptual model, consistent with the general MFT

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 52

Text Box 3.1 Conceptual Model for Coexistence with Wolves in Michigan

In 2013, we conducted an online survey of active and aware Michigan wolf stakeholders in Qualtrics (qualtrics.com) and distributed via snowball sampling (for detailed methodology, see related study Lute et al. 2016). The survey included items measuring moral foundations, affective and cognitive risk perceptions, coexistence behaviours and socio-demographic characteristics through multiple choice-type questions using binary response options and five-point Likert-type scales (reported results collapse responses into agree and disagree). Scale items were evaluated for internal consistency using Cronbach's alpha (all scales were $\geq$0.8; Table 3.1). Means were used to create indices of items with continuous response options: affective and cognitive risk perceptions and the five moral foundations. One summated index was created for coexistence behaviours because it was measured with binary response options. Through zero-order correlations and mediation (i.e. path analyses; Baron & Kenny 1986), we explored relationships in our conceptual model which posited that moralities are foundational intuitions about right and wrong that can directly influence coexistence behaviours (Figure 3.2; Schwartz 1968; Holsman 2000), defined as direct or indirect actions taken to benefit nature or some component of nature (in this case, wolves and wolf habitat). We also posited that the influence of moral intuitions on behaviour may be filtered by both affective and cognitive risk perceptions (Sjöberg 1998) as intermediate steps between a person's foundational moral intuitions and their behaviour or policy positions.

Table 3.1 *Descriptive statistics: mean, standard deviation (SD), Cronbach's alpha and n*

Concept	Item	Mean	SD	Alpha	n
Socio-demographics	Age	53.80	13.64	N/A	855
	Education	5.18	1.94		
	Gender	1.52	0.88		
	Income	6.37	1.93		
	Political Party	3.57	1.54		
	Political Orientation	4.41	1.57		
Moral Foundations	Authority	3.03	0.94	N/A	972
	Fairness	3.55	0.86		
	Harm/Care	2.98	1.05		
	In-group	2.90	0.97		
	Purity	2.97	1.14		
Cognitive Risk Perception	*Frequency*: Evidence of human–wolf conflict is rare in my community.	4.11	1.22	0.92	960

(*continued*)

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 53

Table 3.1 (*continued*)

Concept	Item	Mean	SD	Alpha	n
	Control: I believe that I have control over risks posed by wolves.	3.53	1.18		
	Certainty: If the wolf population increases, human–wolf interactions will increase.	4.13	0.89		
	Trust: I trust wildlife managers to manage wolves appropriately.	3.68	1.30		
	Naturalness: Problems involving wolves are increased by environmental factors.	3.78	0.93		
	Seriousness: The risks posed by wolves are acceptably low.	3.24	1.27		
	Responsiveness: Wildlife managers are responsive to wolf problems.	3.49	1.10		
Affective Risk Perception	I worry about risks posed by wolves to. . . Children	3.34	1.31	0.95	895
	Game species	3.22	1.37		
	Hunting dogs	3.49	1.32		
	Livestock	3.80	1.13		
	My health	2.09	1.10		
	My hunting traditions	2.70	1.42		
	My livelihood	1.89	1.06		
	My personal safety	2.30	1.23		
	Pets	3.61	1.22		
Coexistence Behaviours	Attended a legislative hearing or organizational meeting	0.16	0.37	0.82	855
	Boycotted or avoided buying the products of a company because of their	0.09	0.29		

(*continued*)

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 54

Table 3.1 (*continued*)

Concept	Item	Mean	SD	Alpha	n
	stance on wolf management				
	Donated money to a group	0.17	0.38		
	Called or wrote a letter to a legislator	0.24	0.43		
	Educated others	0.37	0.48		
	Managed land to create or conserve wolf habitat	0.05	0.21		
	Read newsletters, magazines or other publications	0.57	0.50		
	Signed a petition	0.29	0.46		
	Volunteered with a group	0.11	0.32		
	Voted for a candidate in an election based at least in part because of his/her stance on wolf management	0.13	0.33		
	Wrote a letter to a newspaper or called in to a news programme	0.07	0.25		

PROOF

Results

Of the final sample of 1,239 Michigan residents, respondents skewed white (68%) and male (76%). Hunters (32%) were overrepresented in our sample compared to published recreational participation records in Michigan (n=795,535/8% for hunters and n=10,241/0.1% for trappers; Frawley 2013). Conservationists (19%) and environmentalists (10%) were the second- and third-largest identity groups. Animal rights or welfare advocates (6%), farmers (3%), gun rights advocates (8%), property rights advocates (4%) and wildlife advocates (4%) made up smaller proportions of respondents.

Affective Risk Perception: Respondents were more likely to report worry associated with risks posed by wolves to livestock (73%), companion animals (65%), hunting dogs (57%), children (55%) and game species (51%) than hunting traditions (32%), personal safety (18%), human health (9%) or livelihoods (6%). When grouped by identity, environmentalists reported the lowest affective risk perceptions and property rights advocates and hunters showed the highest (Figure 3.1).

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:41 Page Number: 55

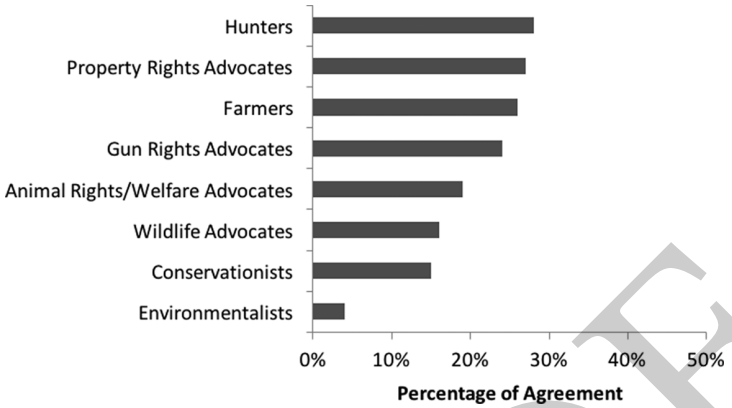

Figure 3.1 Affective risk perceptions by identity. When grouped by self-described identity, percentage of respondents vary in whether they report greater worry (i.e. agreement) that wolves pose risks to nine targets (livestock, companion animals, hunting dogs, children, game species, hunting traditions, personal safety, human health, livelihoods).

Cognitive Risk Perception: Majorities of the total sample agreed that risks were controllable (risk perception factor *control*; 59%), acceptably low (*seriousness*; 48%) and rare (*frequency*; 79%); that wildlife managers were responsive (*responsiveness*; 52%) and trusted (*trust*; 64%); and 'problems involving wolves are increased by environmental factors' (*naturalness*; 70%). High agreement with these measures may indicate low cognitive risk perception. Majorities also agreed 'if the wolf population increases, human–wolf interactions will increase' (*certainty*; 84%). When grouped by identity, property rights advocates show the highest disagreement followed by hunters, wildlife and gun rights advocates.

Testing the Influences of Identity, Risk Perceptions and Moral Judgements on Behaviour

Evidence for mediation is supported when three conditions are met: the relationship between (1) mediator and independent variable is significant, (2) mediator and dependent variable is significant and (3) independent and dependent variable is significantly smaller when the effect of the mediator is controlled (Baron & Kenny 1986). Three moral foundations (i.e. authority, in-group loyalty, harm/care) and the affective risk perception index met the initial criteria for mediation (the zero-order correlation between cognitive risk perception and behaviour was not significant). Therefore, in order to test whether affective risk perception mediated the link between each moral intuition and coexistence behaviour, we conducted a series of regression analyses to infer a causal psychological process occurring in steps: (1) moral foundation→ (2) affective risk perception→ (3) behavioural intentions, where

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 56

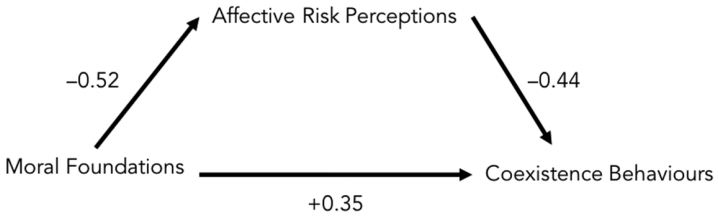

Figure 3.2 Mediation to test moral and risk-related influences on coexistence behaviours. Our affective risk perception index mediated 45% of the total effect of moral foundations on behaviour (**β** = 0.15, *S.E.* = 0.02, $p \leq 0.001$; 95% CI = [0.11, 0.20]).

affective risk perception mediates or *carries* the effect between the moral foundation in question and coexistence behaviour (Baron & Kenny 1986). A mediating variable explains a significant proportion of the relationship between independent and dependent variables.

Affective risk perception mediated the relationship between three moral foundations and coexistence behaviour. A negative link between *authority* and coexistence behaviour was found in the first step (**β** = −0.20). However, when affective risk perception was added, the effect of authority was reduced 59% (**β** = −0.12, *S.E.* = 0.02, $p \leq 0.001$; 95% CI = [−0.09, −0.15]). A negative link between *in-group loyalty* and coexistence behaviour was also found in the first step (**β** = −0.15). When affective risk perception was added, the effect of in-group loyalty was reduced by 85% (**β** = −0.12, *S.E.* = 0.02, $p \leq 0.001$; 95% CI = [−0.09, −0.16]). We found a significant positive relationship between *harm/care* and coexistence behaviour (**β**= 0.27), which was reduced by 26% (**β** = 0.06, *S.E.* = 0.01, $p \leq 0.001$; 95% CI = [0.04, 0.09]) when affective risk perception was added to the model. Each analysis verified that affective risk perception carries a significant portion of the relationship between moral intuitions about (1a) authority, (1b) in-group loyalty and (1c) harm/care and (2) coexistence behaviours.

In this study of active wolf stakeholders, we found support for our proposed model that moral intuitions predict behavioural intentions, and that affective risk perceptions filter these relationships. Affective risk perception was a particularly salient intermediate in the process of translating moral consideration of loyalty to a social group to behaviour. Results indicate that intuitions about both risk and morality are important drivers of behaviour.

approach, suggesting a step-wise psychological process in which basic moral intuitions influence more specific judgements about risk and finally specific coexistence actions (Baron & Kenny 1986). We sought to validate this conceptual model in the Text Box 3.1 case study below.

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 57

3.5 ADDRESSING HUMAN–HUMAN CONFLICT AND ENCOURAGING COEXISTENCE

By recognizing common moral judgements during decision-making and identifying the level of perceived risk that the higher number of stakeholders can accept, decision-making about wildlife may be able to move towards coexistence and reduced HHC (i.e. encourage cooperation) between groups. Without understanding the ways in which moral and risk considerations compete and complement judgements that eventually influence behaviour, wildlife conservation policy working to reduce the scope and magnitude of HHC has lacked potentially useful tools in addressing disagreement over contentious decisions. Identity helps identify patterns in how moral and risk-related judgements may predict behaviours.

The role of science in evidence-based decision-making is central; however, like other sources of information, stakeholders intentionally introduce specific scientific studies to support their arguments. This motivated reasoning can be particularly influential when identity cues are strong (Hart & Nisbet 2012). Stakeholders involved in controversial wildlife policy or practice (i.e. HHC) may accuse others of allowing emotions to drive judgement when in fact emotions play a role in most human judgements (Lute & Gore 2014). The combination of motivated reasoning with a lack of awareness about the role of emotions can complicate HHC mitigation (Smith & DeCoster 2000; Paxton & Greene 2010). Nevertheless, understanding the science-based arguments of involved identity groups and how they relate to the group's accepted level of risk can shepherd decision processes aimed at addressing HHC and create long-term options for wildlife conservation. For example, wildlife advocates often emphasize studies on the trophic cascades and ecosystem benefits of large carnivores (e.g. Ripple & Beschta 2012; Wallach et al. 2015). They consider those benefits as outweighing risks carnivores pose to domestic livestock. On the other hand, ranchers focus on science detailing negative impacts of carnivores on livestock (e.g. Treves et al. 2011), which may serve to reinforce worry and perhaps decrease acceptance of any level of risk. The information deficit model would suggest that providing all best available science to all stakeholders should address motivated reasoning. But the deficit model is limited in assuaging identity-driven conflict over controversial issues (Hart & Nisbet 2012). In such contexts, emotions can be recognized, not vilified and addressed to mitigate HHC and encourage coexistence.

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 58

Understanding which moral intuitions influence stakeholders involved in particular HHCs can inform efforts to enhance resolution and focus the picture of a moral emotional landscape, which in turn can inform understanding of behavioural motivations and thereby how best to address HHC and encourage cooperation. In Text Box 3.1 highlighting aspects of Michigan wolf management, it is evident that moral intuitions clearly shape feelings about risks posed by wolves, which in turn motivate conservation-related behaviour. Moral foundations of in-group loyalty and authority worked in concert with affective risk perception to result in decreased willingness to conserve. The exact mechanism by which authority and in-group loyalty influences affective risk perception is still unclear. For example, the relationship between respect for authority and affective risk perception might indicate that people believe humans should have authority over nature, which correlates with worry about risks posed by wolves (even unlikely ones) and not engaging in activities to benefit wolves. Among those who prioritize moral concerns of authority and in-group loyalty, personal worry about wolves may also be influenced by the worry of respected authorities and identity group members. Just as HHC is often about the symbolic nature of wildlife, HHC can also be about norms and expectations within an identity group (and contests between groups) more than the actual risks wildlife pose to people (hence the worry about low likelihood risks).

In contrast to authority and in-group loyalty, moral concerns about harm/care may encourage coexistence behaviours if the target of care is nature or wildlife. Harm/care concerns may encourage cooperation among differing identity groups if the target of care is other people. However, as the study in Text Box 3.1 suggests, affective risk perceptions may filter the effect of harm/care concerns on behaviour. The direct positive relationship between intuitions about harm/care and coexistence behaviour suggests that when reducing harm to and increasing care of wildlife is salient, conservation-related behaviours are increased. However, reducing harm to (and increasing care of) people may result in decreased coexistence behaviours when worry about wildlife is considered. To avoid decreasing the coexistence behaviours, risk perceptions need to be addressed and mitigated in appropriate ways.

Efforts to reduce HHC by leveraging insight about risk perceptions require careful consideration of the fact that affective risk perceptions, more so than cognitive risk perceptions and purely rational risk assessments, may play an important role in influencing coexistence behaviours. In other words, disagreement over wildlife management may not

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 59

be about uncertainty surrounding the likelihood of risks but about worry associated with risks and how they are managed regardless of the frequency of exposure. In the Text Box 3.1 study, risks were considered rare and acceptably low. Yet affective risk perception levels in relation to certain targets (e.g. children, livestock) may be high among certain stakeholders in this and other contexts (Sponarski et al. 2015). Wildlife management strategies might aim to mitigate human–wildlife conflict as well as HHC by identifying what level of perceived risk is acceptable to the greatest number of stakeholders while also addressing legitimate concerns of minority groups (to avoid both tyrannies of the majority and minority where possible). Results from the study in Text Box 3.1 suggest that the degree of perceived risk may be irrelevant or that stakeholders may be aiming for very low perceived risk in relation to wolves (perhaps because of ideas about human authority over nature as hypothesized above). Although the assessed risk from wildlife to humans may be low, it will likely never be reduced to zero. Thus, a more pragmatic objective may be to attenuate perceived risk to accurately reflect the low level of assessed risk. Risk messaging that successfully reduces stakeholder worry about wildlife-related threats to vulnerable others may be more effective at mitigating risk-related disagreement (rather than aiming to reduce the likelihood of already low-level risks; Gore & Knuth 2009; Muter et al. 2009).

Affective risk perceptions may have the potential to decrease coexistence behaviours associated with HHC but concerns about reducing harm to and caring for nature may increase participation in positive human–nature interactions. One way to promote positive behaviours or conversely to discourage negative ones is to frame communications and outreach to stakeholders appropriately and specifically to different identity groups. Communication that only addresses cognitive aspects of risk perception (e.g. judgements about probabilities that a carnivore will attack livestock) may fall short of objectives without also addressing emotional aspects and moral judgements, such as harm to and care for nature. In order to address emotional aspects of risk, effective and targeted engagement of identity groups with high affective risk perceptions (in the study in Text Box 3.1, hunters, gun and property rights advocates) may offer: (1) support for worries as valid (regardless of likelihood), and (2) ways to reinforce residents' sense of control to protect vulnerable others (Keller et al. 2006). With effective risk communication, wildlife conservation can transcend HCC and wildlife conservation can progress along the conflict-to-coexistence continuum.

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 60

3.6 RECOMMENDATIONS AND FUTURE DIRECTIONS

This chapter sought to explore some ways to promote coexistence and influence HHC through the lenses of social identity, risk perception and moral foundations theories. Key points for takeaway and recommendations for meeting the challenges of value-based conflicts over wildlife include:

- Affective risk perceptions related to worry about vulnerable others, particularly game species and domestic animals, can decrease positive coexistence behaviours more so than cognitive risk perceptions related to certainty, control, frequency, naturalness, responsiveness, seriousness and trust.
- Moral concerns related to authority and in-group loyalty can reduce coexistence behaviours among certain stakeholders, especially when those stakeholders worry about the risks posed by carnivores to vulnerable others.
- Conversely, moral concerns of reducing harm and maximizing care can encourage coexistence among diverse stakeholders.
- Recognizing and understanding the kinds of moral judgements that are most salient for a person or identity group (e.g. reducing harm to carnivores, caring for people, being loyal to a group) can help stakeholders feel heard, which may alleviate conflict and encourage engagement in a decision process that will lead to a decision that diverse stakeholders can support.
- HHC may be reduced if perceived and assessed levels of risk are closer to matching among all involved identity groups. To assuage high levels of perceived risk among some stakeholders, risk communications should address worry related to vulnerable others rather than, or in addition to, appealing to cognitive risk perceptions.
- An overemphasis on science that ignores the role of emotions in judgements with moral and risk dimensions will likely hamstring efforts to effectively address HHC.
- Experiments with risk messaging and other interventions to encourage positive human–nature interactions.
- Confirmation of Text Box 3.1 study findings in other wildlife contexts and among broader stakeholder groups.
- Further exploration of the relationships between moral intuitions about authority/in-group loyalty and affective risk perception.
- Direct measures of psychological processes (e.g. implicit association tests) related to judgements about wildlife, other elements in nature and fellow wildlife stakeholders.

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 61

3.7 References

Amit, E. & Greene, J. D. (2012). You see, the ends don't justify the means: Visual imagery and moral judgment. *Psychological Science*, 23, 861–8.

Associated Press. (2013, 22 May). Wolf hunt referendum to go on 2014 Michigan ballot. *Detroit Free Press*. Lansing, Michigan.

Baron, R. & Kenny, D. (1986). The moderator–mediator distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality & Social Psychology*, 51, 1173–82.

Bruskotter, J. T., Vucetich, J. A., Enzler, S., Treves, A. & Nelson, M. P. (2014). Removing protections for wolves and the future of the U.S. Endangered Species Act (1973). *Conservation Letters*, 7, 401–7.

Carter, N. H. & Linnell, J. D. C. (2016). Co-adaptation is key to coexisting with large carnivores. *Trends in Ecology & Evolution*, 31, 575–8.

De Vente, J., Reed, M. S., Stringer, L., Valente, S. & Newig, J. (2016). How does the context and design of participatory decision-making processes affect their outcomes? Evidence from sustainable land management in global drylands. *Ecology & Society*, 21, art. 24.

Dohmen, T., Falk, A. & Huffman, D. (2011). Individual risk attitudes: Measurement, determinants and behavioral consequences. *Journal of the European Economic Association*, 9, 522–50.

Earle, T. C. & Siegrist, M. (2008). On the relation between trust and fairness in environmental risk management. *Risk Analysis*, 28, 1395–414.

Ford, J., O'Hare, D. & Henderson, R. (2012). Putting the 'we' into teamwork: Effects of priming personal or social identity on flight attendants' perceptions of teamwork and communication. *Human Factors: The Journal of the Human Factors & Ergonomics Society*, 55, 499–508.

Frank, B. (2016). Human–wildlife conflicts and the need to include tolerance and coexistence: An introductory comment. *Society & Natural Resources*, 1920, 1–6.

Frawley, B. J. (2013). *2012 Michigan Furbearer Harvest Survey*. Lansing, Michigan.

Giannakakis, A. E. & Fritsche, I. (2011). Social identities, group norms, and threat: On the malleability of ingroup bias. *Personality & Social Psychology Bulletin*, 37, 82–93.

Gibbs, C., Gore, M. L., McGarrell, E. F. & Rivers, L. (2009). Introducing conservation criminology: Towards interdisciplinary scholarship on environmental crimes and risks. *British Journal of Criminology*, 50, 124–44.

Gore, M. L. & Knuth, B. A. (2009). Mass media effect on the operating environment of a wildlife-related risk-communication campaign. *Journal of Wildlife Management*, 73, 1407–13.

Gore, M. L, Knuth, B. A., Curtis, P. D. & Shanahan, J. E. (2007). Factors influencing risk perception associated with human–black bear conflict. *Human Dimensions of Wildlife*, 12, 133–6.

Gore, M. L., Ratsimbazafy, J. & Lute, M. L. (2013). Rethinking corruption in conservation crime: Insights from Madagascar. *Conservation Letters*, 6, 430–8.

Gore, M. L., Wilson, R. S., Siemer, W. F., Hudenko, H. W., Clarke, C. E., Hart, P. S., Maguire, L. A. & Muter, B. A. (2009). Application of risk concepts to

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 62

wildlife management: Special issue introduction. *Human Dimensions of Wildlife*, 14, 301–13.

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. & Ditto, P. H. (2013). Moral Foundations Theory: The pragmatic validity of moral pluralism. *Advances in Experimental Social Psychology*, 47, 55–130.

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S. & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality & Social Psychology*, 101, 366–85.

Haidt, J. (2007). The new synthesis in moral psychology. *Science*, 316, 998–1002.

Haidt, J. (2012). *The Righteous Mind: Why Good People Are Divided by Politics and Religion*. New York: Pantheon Books.

Haidt, J. & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Dædalus*, 133, 55–66.

Haidt, J. & Joseph, C. (2007). The moral mind: How five sets of innate intuitions guide the development of many culture-specific virtues, and perhaps even modules. In P. Carruthers, S. Laurence & S. Stich, eds., *The Innate Mind*. New York: Oxford University Press, pp. 367–91.

Hart, P. S. & Nisbet, E. C. (2012). Boomerang effects in science communication: How motivated reasoning and identity cues amplify opinion polarization about climate mitigation policies. *Communication Research*, 39, 701–23.

Hatcher, A., Jaffry, S., Thébaud, O. & Bennett, E. (2000). Normative and social influences affecting compliance with fishery regulations. *Land Economics*, 76, 448–61.

Holsman, R. H. (2000). Goodwill hunting? Exploring the role of hunters as ecosystem stewards. *Wildlife Society Bulletin*, 28, 808–16.

Johansson, M. & Karlsson, J. (2011). Subjective experience of fear and the cognitive interpretation of large carnivores. *Human Dimensions of Wildlife*, 16, 15–29.

Jurin, R. R., Roush, D. & Danter, J. (2010). *Environmental Communication*, 2nd edn. Dordrecht: Springer.

Keller, C., Siegrist, M. & Gutscher, H. (2006). The role of the affect and availability heuristics in risk communication. *Risk Analysis*, 26, 631–9.

Labianca, G., Brass, D. J. & Gray, B. (1998). Social networks and perceptions of intergroup conflict: The role of negative relationships and third parties. *The Academy of Management Journal*, 41, 55–67.

Lazo, J. K, Kinnell, J. C. & Fisher, A. (2000). Expert and layperson perceptions of ecosystem risk. *Risk Analysis*, 20, 179–93.

Liao, C., Lin, H-N. & Liu, Y-P. (2009). Predicting the use of pirated software: A contingency model integrating perceived risk with the theory of planned behavior. *Journal of Business Ethics*, 91, 237–52.

Lindquist, K. A., Barrett, L. F., Bliss-Moreau, E. & Russell, J. A. (2006). Language and the perception of emotion. *Emotion*, 6, 125–38.

Lute, M., Bump, A. & Gore, M. L. (2014). Identity-driven differences in stakeholder concerns about hunting wolves. *PLoS ONE*, 9, e114460.

Lute, M., Navarrete, C. D., Nelson, M. P. & Gore, M. L. (2016). Assessing morals in conservation: The case of human–wolf conflict. *Conservation Biology*, 30, 1200–11.

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 63

Lute, M. L. & Axelrod, M. (2015). Public preferences for wolf management processes in Michigan. *Human Dimensions of Wildlife*, 20, 95–7.

Lute, M. L. & Gore, M. L. (2014). Stewardship as a path to cooperation? Exploring the role of identity in intergroup conflict among Michigan wolf stakeholders. *Human Dimensions of Wildlife*, 19, 267–79.

Madden, F. & McQuinn, B. (2014). Conservation's blind spot: The case for conflict transformation in wildlife conservation. *Biological Conservation*, 178, 97–106.

Manfredo, M. J., Bruskotter, J. T., Teel, T. L., Fulton, D., Schwartz, S. H., Arlinghaus, R., Oishi, S., Uskul, A. K., Redford, K., Kitayama, S. & Sullivan, L. (2017a). Why we can't change social values for the sake of conservation. *Conservation Biology*, 31, 772–80.

Manfredo, M. J., Teel, T. L., Sullivan, L. & Dietsch, A. M. (2017b). Values, trust, and cultural backlash in conservation governance: The case of wildlife management in the United States. *Biological Conservation*, 214, 303–11.

Muter, B. A., Gore, M. L. & Riley, S. J. (2009). From victim to perpetrator: Evolution of risk frames related to human–cormorant conflict in the Great Lakes. *Human Dimensions of Wildlife*, 14, 366–79.

Naughton-Treves, L., Grossberg, R. & Treves, A. (2003). Paying for tolerance: Rural citizens' attitudes toward wolf depredation and compensation. *Conservation Biology*, 17, 1500–11.

Navarrete, C. D., McDonald, M. M., Molina, L. E. & Sidanius, J. (2010). Prejudice at the nexus of race and gender: An outgroup male target hypothesis. *Journal of Personality and Social Psychology*, 98, 933–45.

Nie, M. (2003). Drivers of natural resource-based political conflict. *Policy Sciences*, 36, 307–41.

Nie, M. A. (2002). Wolf recovery and management as value-based political conflict. *Ethics, Place & Environment*, 5, 65–71.

O'Connor, R. E., Bord, R. J. & Fisher, A. (1999). Risk perceptions, general environmental beliefs, and willingness to address climate change. *Risk Analysis*, 19, 461–71.

Oosting, J. (2013, 26 November). New Michigan group seeks to protect future wolf hunts with citizen-initiated legislation. *MLive*. Lansing, Michigan.

Paxton, J. M. & Greene, J. D. (2010). Moral reasoning: Hints and allegations. *Topics in Cognitive Science*, 2, 511–27.

Riley, S. J. & Decker, D. J. (2000). Risk perception as a factor in wildlife stakeholder acceptance capacity for cougars in Montana. *Human Dimensions of Wildlife Management*, 4, 50–62.

Ripple, W. J. & Beschta, R. L. (2012). Trophic cascades in Yellowstone: The first 15 years after wolf reintroduction. *Biological Conservation*, 145, 205–13.

Rivers, L. & Arvai, J. (2007). Win some, lose some: The effect of chronic losses on decision making under risk. *Journal of Risk Research*, 10, 1085–99.

Rogers, E. M. (1975). *Diffusion of Innovations*, 4th edn. New York: The Free Press.

Schwartz, S. H. (1968). Awareness of consequences and the influence of moral norms on interpersonal behavior. *Sociometry*, 31, 355–69.

Sherif, M. (1967). *Group Conflict and Cooperation: Their Social Psychology*. London: Routledge & Kegan Paul Ltd.

PROOF

Comp. by: T.SATHIA Stage: Proof Chapter No.: 3 Title Name: FrankEtAl
Date:30/11/18 Time:14:35:42 Page Number: 64

Sjöberg, L. (1998). Worry and risk perception. *Risk Analysis*, 18, 85–93.
Sjöberg, L. (2000). Factors in risk perception. *Risk Analysis*, 20, 1–12.
Sjöberg, L. & Winroth, E. (1986). Risk, moral value of actions, and mood. *Scandinavian Journal of Psychology*, 27, 191–208.
Skogen, K. & Krange, O. (2003). A wolf at the gate: The anti-carnivore alliance and the symbolic construction of community. *Sociologia Ruralis*, 43, 309–25.
Slovic, P. (1987). Perception of risk. *Science*, 236, 280–5.
Smith, E. R. & DeCoster, J. (2000). Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. *Personality & Social Psychology Review*, 4, 108–31.
Sponarski, C. C., Vaske, J. J. & Bath, A. J. (2015). Attitudinal differences among residents, park staff, and visitors toward coyotes in Cape Breton Highlands National Park of Canada. *Society & Natural Resources*, 28, 720–32.
Tajfel, H. & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel, eds. *The Social Psychology of Intergroup Relations*. Monterey, CA: Brooks/Cole, pp. 33–47.
Treves, A., Martin, K. A., Wydeven, A. P. & Wiedenhoeft, J. E. (2011). Forecasting environmental hazards and the application of risk maps to predator attacks on livestock. *BioScience*, 61, 451–8.
Wallach, A. D., Ripple, W. J. & Carroll, S. P. (2015). Novel trophic cascades: Apex predators enable coexistence. *Trends in Ecology & Evolution*, 30, 146–53.
Wilson, R. S. (2008). Balancing emotion and cognition: A case for decision aiding in conservation efforts. *Conservation Biology*, 22, 1452–60.
Wilson, R. S. & Arvai, J. L. (2010). Why less is more: Exploring affect-based value neglect. *Journal of Risk Research*, 13, 399–409.
Wilson, R. S. & Bruskotter, J. T. (2009). Assessing the impact of decision frame and existing attitudes on support for wolf restoration in the United States. *Human Dimensions of Wildlife*, 14, 353–65.

PROOF