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ABSTRACT

While there is an assumption that wildlife value orientations can be useful in strategic communication, few studies have empirically explored this topic. This article used the concept of wildlife value orientations to understand how to increase the motivation of people to process information about wildlife in the context of persuasive communication. A confirmatory factor analysis was used to identify mutualism and domination wildlife value orientations. From the wildlife value orientations, crosstabs were used to create a typology with four discreet segments: mutualists, pluralists, traditionalists, and distanced. A series of ANOVAs examined how important different messages about bear safety were to the typology segments. Results indicated that message relevancy differs among wildlife value orientations. Managers can use this information to help frame their communications about wildlife-related issues. Future research should continue to explore the impact of this value-framing approach to other persuasive communication concepts, like attitudes and behaviors.

Introduction

Dealing with human–wildlife interactions is a salient issue for many managers of park and protected areas. Some interactions can be a serious issue for visitor safety, and many dangerous interactions are a result of inappropriate human behaviors (DiStefano, 2005; Penteriani et al., 2016; Woodroffe & Ginsberg, 1998). One tool managers use to address inappropriate or unsafe human–wildlife interactions is communication. Communication is often used in park and protected area management because it usually does not require as many resources as more direct forms of management. For instance, it is often more appropriate than enforcement in wildland settings, is preferred by visitors when compared to direct forms of management, and can be effective at influencing visitor behaviors (Brown, Ham, & Hughes, 2010; Ham, 2013; Manning, 2003; Manning, R, 2011).

Developing relevant messages is critical for creating effective communication strategies. Relevancy is a key motivator in persuasive communication theories, such as the elaboration likelihood model (ELM) (Petty & Cacioppo, 1986). Message relevancy increases

thoughtful processing, called elaboration, which can change attitudes and potentially affect behaviors (Armitage & Connor, 2001; Miller, 2017; Petty, McMichael, & Brannon, 1992; Vezeau, Powell, Stern, Moore, & Wright, 2015). This article explored message relevancy as part of the persuasive communication process.

Message relevancy is particularly important in non-captive audiences, such as visitors to park and protected areas. Visitors are exposed to numerous messages, but if the message is not perceived as relevant, they may not process them (Ham, 2013; Lackey & Ham, 2003; Petty & Cacioppo, 1986). Protected area visitors hold a diversity of beliefs and interests, and these characteristics influence the persuasion process (Hall, Ham, & Lackey, 2010; Ham, 2013). When addressing human–wildlife interactions, wildlife value orientations (WVOs) are a useful for understand differences among visitors (Fulton, Manfredo, & Lipscomb, 1996; Teel & Manfredo, 2009; Teel et al., 2010). WVOs are clusters of context specific basic beliefs about wildlife that give meaning to more basic values (Teel & Manfredo, 2009). WVOs can be used to address human–wildlife conflict through targeted communications (Bright, Manfredo, & Fulton, 2000; Crawford, Poudyal, & Maerz, 2015; Hermann, Voß, & Menzel, 2013; Jacobs, Vaske, & Sijtsma, 2014). Visitors with different WVOs are likely to find different types of messages about wildlife relevant (Bright et al., 2000; Hermann et al., 2013). Few studies, however, have explicitly investigated this relationship. This article examines the relationship between WVOs and message relevancy in a sample of visitors to Yellowstone National Park (YNP).

YNP is home to a substantial population of grizzly bears (*Ursus arctos*). Safe hiking in grizzly bear country necessitates adopting several specific behaviors (NPS, 2017a), and YNP has developed communications strategies intended to increase visitors' bear safety behavior compliance. However, compliance with bear safety is low (NPS, 2017b), and there has been a spike in deaths from grizzly attacks in YNP. From 1963 to 2010, only three deaths from grizzly bears occurred in the park. Between 2011 and 2015, however, three YNP visitors were killed by grizzly bears in separate incidents (NPS, 2017c). Visitation to YNP increased from 1963 to 2015, as did grizzly bear populations (NPS, 2017d, 2017e). This article explored the relevancy of different bear safety messages to visitors with different WVOs. Messages that are more relevant could increase visitors' adoption of bear safety behaviors while hiking. The research question for this study is:

R$_1$:   Does message relevancy about bear safety vary among visitors with different WVOs?

Message relevancy and persuasive communication

The ELM is a widely used theory for developing persuasive communication materials (Teng, Khong, & Goh, 2014). Persuasion is concerned with influencing people's attitudes, which predict behavioral intentions and actual behaviors (Armitage & Connor, 2001; Ajzen, 1991; Fishbein & Ajzen, 2010; Ham, 2013; Miller, 2017; Petty & Cacioppo, 1986). There are two routes to persuasion: the peripheral and the central route. For the central persuasion route, people need to be motivated and able to process a message (Petty & Cacioppo, 1986). In persuasive communication, motivation usually comes from the relevance of the message (Ham, 2013).

Central route processing is a logical, thoughtful consideration of information (i.e., elaboration) (Petty & Cacioppo, 1986). The central route to persuasion is generally preferred over the peripheral route because attitude changes from the former tends to be salient, persistent, durable, and predictive of behaviors (Petty et al., 1992). Unfortunately, most decisions people make are not based on the elaborative, central route processing (Bargh & Chartrand, 1999; Petty et al., 1992). People have a limited capacity and ability to centrally process information and reserve this cognitive processing capacity for important situations (Bargh & Chartrand, 1999; Gilbert, Pelham, & Krull, 1988). Providing messages that people identify as important may increase relevancy and motivate central route processing (Ham, 2013; Petty & Cacioppo, 1986).

Relevant messages are generally meaningful and personal (Ham, 2013). Meaningful means that messages connect with something people already find true or know (Ham, 2013). For example, messages about wildlife that match our own beliefs may be more meaningful. Personal means that messages should target something people care about (Ham, 2013). People who value wildlife are likely to find messages that match their values as more personal. Ham (2013) states, "…non-captive audience [will] almost always ignore information that seems unimportant, even if they understand it perfectly" (p. 32). Message importance serves as a form of message relevancy. Relevancy is usually considered the "why" portion of the message, as opposed to the "what" portion. For instance, most bear safety messages in YNP say that bears are dangerous (why) and describe behaviors people can adopt (what). Messages importance is a prerequisite for elaboration to occur. Increased relevance promotes higher levels of elaboration, which can affect behaviors.

Wildlife value orientations

Value orientations are part of the cognitive hierarchy or the value-attitude-behavior hierarchy (Homer & Kahle, 1988; Kluckholn, 1951). This theory suggests lower level cognitions (e.g., values, value orientations) influence higher level cognitions (e.g., attitudes, norms) and behaviors (Teel & Manfredo, 2009). Values tend to be few, abstract, widely shared by individuals in a culture, stable across situations, and relatively resistant to change (Fulton et al., 1996; Rokeach, 1973). Beliefs relate to a specific domain, like national parks or wildlife. Patterns of beliefs, both in direction and strength, comprise a value orientation. Attitudes are a positive or negative evaluation of a subject or object based upon a person's beliefs about the outcome of the attitude subject (Ajzen, 1991). Behavioral intentions are a close antecedent to actual behaviors (Ajzen, 1991).

WVOs were originally developed by Fulton et al. (1996) and have been used to predict recreational activity participation. Hunters, wildlife viewers, and general outdoor recreationists expressed different WVOs (Hrubes, Ajzen, & Daigle, 2001). WVOs can influence support for wildlife related management actions (Bright et al., 2000; Manfredo, Pierce, Fulton, Pate, & Gill, 1999), and more severe responses (e.g., killing nuisance wildlife, wildlife trapping) to wildlife are associated with people who have a utilitarian value orientation (Manfredo, Teel, & Bright, 2003; Perry-Hill et al., 2014).

Research has identified two WVOs: mutualism and domination (Teel & Manfredo, 2009). Mutualism is measured by the belief dimensions of social affiliation and caring. Domination is measured by beliefs regarding appropriate use and hunting. These WVOs have been used to segment people into a four-level discreet typology: traditionalists (high

domination, low mutualism), pluralists (high domination, high mutualism), mutualists (high mutualism, low domination), and distanced (low mutualism, low domination). Proportions of the typology vary across geographical areas in the USA (Teel & Manfredo, 2009).

Levels of agreement regarding topics such as hunting, logging, private property rights, and predator management vary by WVO (Teel & Manfredo, 2009). In Germany, WVOs were predictive of support for reintroduction of bison and the migration of wolves (Hermann et al., 2013). WVOs were also predictive of support for lethal control of agriculturally harmful wildlife species (geese, deer) in the Netherlands (Sijtsma, Vaske, & Jacobs, 2012). The WVO measures appear to be theoretically and empirically robust instruments for understanding the relationship and behaviors between humans and wildlife.

WVOs can also be used in protected areas to address human–wildlife conflict through targeted messaging (Bright et al., 2000; Crawford et al., 2015; Hermann et al., 2013; Jacobs et al., 2014). The idea that WVOs are effective for framing communications is lacking empirical evidence, but it is a logical assumption. Audience characteristics play a role in persuasive communication (Hall et al., 2010), and WVOs can facilitate understanding differences in an audience. Visitors with different WVOs will likely find different types of "why" messages relevant. Messages should be crafted to address the different types of relationships visitors have with wildlife (Hall et al., 2010; Ham, 2013; Hermann et al., 2013).

Although research describes how WVOs can be useful in communication, few have explicitly tested the relationship. This article evaluated message relevancy among different WVOs. Importance is used as a measure of relevancy. Message importance can encourage central route processing. Elaboration likelihood is higher if information is more appealing to an individual (Pratkanis & Greenwald, 1993; Tam & Ho, 2005).

Methods

Sample

YNP day hikers were systematically sampled during peak season visitation on two different trails between July 1 and August 15 2016. Managers at YNP helped select the trails. Data collection was distributed to represent all days of the week. In total, 777 groups of hikers were contacted. If a group of more than one person was intercepted, only one person was selected from the group to participate. To prevent self-selection, the person with the most recent birthday was asked to complete the survey. Out of 763 eligible groups, 647 individuals agreed to participate (response rate = 85%). Two questions were used to evaluate for a non-response bias: age and US residency/citizenship. There were no significant differences ($p < .05$) between respondents and non-respondents for the two variables.

Data instrument

The questionnaire was presented to respondents on an electronic tablet. An abbreviated version of the WVO measures was developed. Questions about killing or hunting animals

were excluded from the survey due to their potential controversy. The resulting WVO items measured only mutualism and domination, and not their underlying constructs (e.g., appropriate use, hunting, social affiliation, caring; see Teel & Manfredo, 2009). Respondents were asked, "In general, how much do you disagree or agree with the following statement." All responses were measured on a 7-point scale, where 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither, 5 = slightly agree, 6 = agree, and 7 = strongly agree. Six different items measured the mutualist WVO, all of which were adapted from previous research (Larson, Whiting, & Green, 2011; Teel & Manfredo, 2009; Vaske, Donnelly, Williams, & Jonker, 2001). They are "We should strive for a world where humans and wildlife can live side by side without fear," "I feel a strong emotional bond with animals," "Wildlife has value, whether people are present or not," "Wildlife are like my family and I want to protect them," "I view all living things as part of one big family," and "Wildlife has as much right to exist as people." Five items were used to measure the domination WVO. These include "The needs of humans should take priority over wildlife protection," "Wildlife is on earth primarily for people's benefit," "Humans should manage wildlife populations so that humans benefit," "Wildlife is important because of what it can contribute to the pleasure and welfare of humans," and "Wildlife is only valuable if people benefit."

Eight different messages were evaluated for their level of importance, which serves as a proxy for message relevancy (Hall et al., 2010; Ham, 2013; Petty & Cacioppo, 1986; Tam & Ho, 2005). Respondents were presented with the statement, "Please rate the following statements according to how important they are to you." Responses were recorded on a 5-point type scale, where 1 = not at all important, 2 = slightly important, 3 = moderately important, 4 = very important, and 5 = extremely important. Five of the messages were from existing YNP communication materials. Messages were selected and developed to appeal to both mutualist and domination WVOs. The first five messages were selected from park materials, and the last three were created by researchers (see Table 3). Respondents were presented with text-only versions of the messages on the survey exactly as presented in Table 3 in a fixed order.

Analysis

Cases with missing data were deleted listwise and the final sample size was 630. Bootstrapping was used to correct for the lack of multivariate normality. The internal consistency and structure of the WVO measures were examined using a confirmatory factor analysis (CFA) and Rho reliability analysis. Rho was used instead of Cronbach's alpha because it is more accurate than Cronbach's alpha when factor loadings are not tau equivalent (e.g., factor loadings are unequal) (Graham, 2006). Rho values ≥.65 were considered acceptable (Vaske, 2008). Several fit statistics evaluated the CFA. For the RMSEA, values should be ≤.10, with values ≤.05 considered to be indicative of an excellent fit (Browne & Cudeck, 1993; Kline, 2011). A p-close test was also provided for RMSEA with a value of >.05 being considered a close fit (Kline, 2011). SRMR values should be ≤.08. Both the CFI and TLI should have values ≥.90, with values ≥.95 indicating an excellent fit (Hu & Bentler, 1998). In addition, all factor loadings should be statistically significant and >.30, with loadings >.60 considered high (Kline, 1994).

Results from the CFA were used to create a mean index for both WVO dimensions (e.g., mutualism and domination). This process followed Teel and Manfredo's (Teel & Manfredo, 2009) method of creating and segmenting groups. Univariate ANOVAs examined differences among the groups for specific messages, with post-hoc analyses using Bonferonni corrections.

Results

Sample characteristics

About half of the respondents were male (53%) and the average age was 40.7 years. Over 91% of respondents were White, with the next largest group being Asian (6%). Over 90% had at least some college, with 40% holding a Bachelors and another 40% reporting a graduate degree. Over 80% of respondents resided in the USA; 47 of the 50 states were represented.

Wildlife value orientations

Table 1 provides variable codes and descriptive statistics for WVO measures. One variable (V3, "Wildlife has value, whether people are present or not") had a relatively low standard deviation (0.65) and was excluded from the analysis. The CFA model provided some evidence that the data fit the model (χ^2 = 149.278, df = 34, p < .001; BS_{boot}, p = .002; RMSEA = .073, p-close = .001; SRMR = .069; CFI = .93; TLI = .90), but the p-close test for the RMSEA was significant. Modification indices indicated that two additional variables (V6, "Wildlife has as much right to exist as people," and V10, "Wildlife is important because of what it can contribute to the pleasure and welfare of humans) could be

**Table 1.** Descriptive statistics[a] and reliability for wildlife value orientations measures.

Dimension	Variable code	Variable	Mean (SD)
Mutualism Rho = .76			5.7 (1.09)
	V1	We should strive for a world where humans and wildlife can live side by side without fear.	5.9 (1.56)
	V2	I feel a strong emotional bond with animals.	5.6 (1.35)
	V4	Wildlife are like my family and I want to protect them.	5.7 (1.39)
	V5	I view all living things as part of one big family.	5.6 (1.44)
Domination Rho = 0.74			3.0 (1.28)
	V7	The needs of humans should take priority over wildlife protection.	3.7 (1.81)
	V8	Wildlife is on earth primarily for people's benefit.	3.0 (1.98)
	V9	Humans should manage wildlife populations so that humans benefit.	3.5 (1.87)
	V11	Wildlife is only valuable if it produces human benefits.	1.8 (1.18)
Items removed from CFA			–
	V3[b]	Wildlife has value, whether people are present or not.	6.7 (0.65)
	V6[b]	Wildlife has as much right to exist as people.	6.4 (1.00)
	V10[c]	Wildlife is important because of what it can contribute to the pleasure and welfare of humans.	4.4 (1.92)

[a]Items measured on a 7-point scale, where 1 = strongly disagree and 7 = strongly agree.
[b]Items originally measure mutualism dimension.
[c]Item originally measured domination dimension.
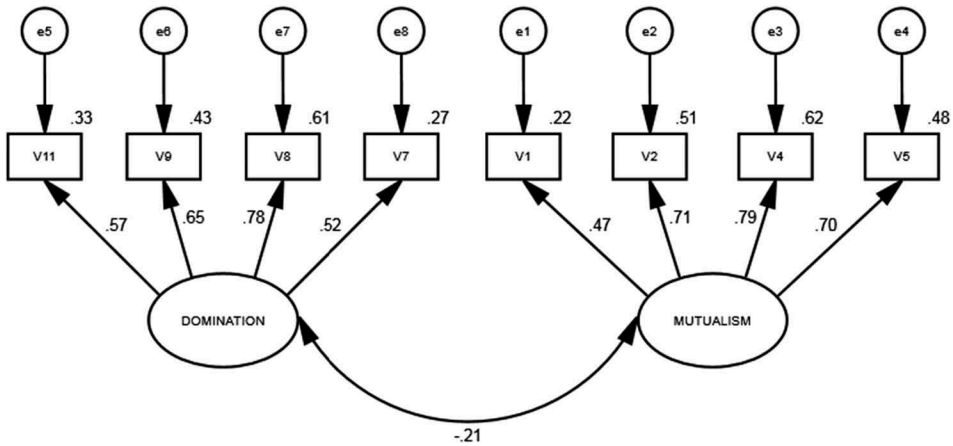
Figure 1. CFA of wildlife value orientation measures. All loadings are standardized and statistically significant ($p < 0.01$). Fit statistics: $\chi^2 = 33.320$, $df = 10$, $p = 0.022$; BS_{boot}, $p = 0.072$; RMSEA = 0.035, p-close = 0.903; SRMR = 0.0312; CFI = 0.99; TLI = 0.98. See Table 1 for corresponding variable codes.

removed. The final model (Fig. 1) indicated that there was a good fit between the data and the model. Although the χ^2 test was significant ($\chi^2 = 33.320$, $df = 10$, $p = .022$), all other fit statistics supported the model (BS_{boot}, $p = .072$; RMSEA = .035, p-close = .903; SRMR = .0312; CFI = .99; TLI = .98). All factor loadings were statistically significant ($p < .01$) and over the threshold of .30, with most above .60. Rho reliability ranged between .74 and .76 (see Table 1).

Importance of messages about bear safety among WVO typology

Using the results of the CFA, groups were segmented using their scores on both WVO dimensions (Table 2). A series of univariate ANOVAs showed significant differences ($p < .05$) in the level of importance of messages about bear safety among the WVO typology for every message tested (Table 3). However, the effect size was weak for all tests (Cohen, 1988), and the η ranged from .17 to .23. The post-hoc analyses provided further insight into the differences among the typology (e.g., distanced, mutualists, pluralists, and traditionalists) derived from the two WVOs (e.g., mutualism and domination). In seven out of the eight messages, mutualists and traditionalists were significantly different. In all of these instances, mutualists found the messages presented as more important than traditionalists. Distanced respondents were more like traditionalists, showing no significant difference with them on seven of the eight messages. Pluralists fell somewhat in the middle, often differing from only one other group (in five of eight of the messages).

Table 2. Mean comparison of a wildlife value orientation typology.

Dimension	Mutualists $n = 185$	Traditionalists $n = 172$	Pluralists $n = 146$	Distanced $n = 127$	p-value
Mutualism	6.5[a]	4.7[b]	6.4[a]	4.9[b]	<.001
Domination	1.9[a]	4.0[b]	4.1[b]	2.0[a]	<.001

Note. Means with different superscript letters in the same row are significantly different ($p < .05$) using Bonferonni post-hoc tests.

Table 3. Mean comparisons of message importance among wildlife value orientation typology[1].

	WVO typology					
Message	Mutualist	Traditionalist	Pluralist	Distanced	p-value	Effect size
Even though the animals of Yellowstone seem tame, they are still wild.	4.7[a]	4.4[b]	4.6[a]	4.6[ab]	<.001	.03
In 2011 and 2015, in separate incidents, three visitors were killed by bears inside the park.	3.9[ac]	3.8[ad]	4.2[c]	3.6[bd]	<.001	.04
All wildlife, especially bears, can be dangerous.	4.6[ac]	4.4[bd]	4.6[bc]	4.4[d]	.001	.03
Bear spray has been proven to be highly successful at stopping aggressive behavior in bears.	4.3[a]	4.1[b]	4.5[a]	4.1[b]	<.001	.04
There is no guarantee of your safety in bear country.	4.6[a]	4.2[b]	4.5[a]	4.2[b]	<.001	.05
You are entering a place that is home to many bears. It is your responsibility to know how to behave.	4.8[a]	4.5[b]	4.7[ac]	4.6[bc]	<.001	.05
Taking safety precautions while hiking helps keep Yellowstone's bears healthy, safe, and wild.	4.8[a]	4.4[b]	4.6[ac]	4.5[bc]	<.001	.05
Hiking in places where grizzly bears live, like Yellowstone, is different than hiking in other places. Know how to act!	4.7[a]	4.4[b]	4.7[a]	4.5[ab]	<.001	.03

Note. Means with different superscript letters in the same row are significantly different ($p < 0.05$) using Bonferonni post-hoc tests.
[1]Items were measured on a 5-point Likert-type scale where 1 = not at all important and 5 = extremely important.

Pluralists were most similar to mutualists (no significant difference between the groups for any messages) and most different when compared to traditionalists (differing on seven of the eight messages). In general, mutualists had rated messages higher than other groups. This is particularly true when compared to traditionalists, who rated messages lower than other groups in almost every instance.

For most messages that were explicitly designed to appeal to more mutualistic values (e.g., "You are entering a place that is home to many bears. It's your responsibility to know how to act," "Taking safety precautions while hiking helps keep Yellowstone's bears healthy, safe, and wild."), pluralists and mutualists rated them as more important when compared to traditionalists. Distanced respondents were not different from any groups for these messages. A similar pattern can be found in some less explicit appeals to mutualistic WVOs (e.g., "Even though the animals of Yellowstone seem tame, they are still wild," "There is no guarantee of your safety in bear country"). The one message that appealed specifically to more human–centered, traditionalist WVOs (e.g., "In 2011 and 2015, in separate incidents, three visitors were killed by bears inside the park") was also the only message where mutualists and traditionalists were not different in their rating of importance, although there were some other differences among the groups.

Discussion

This research explored how different messages about bear safety vary in their relevance among WVO typology. Message importance was used as a proxy to understand relevance. The results indicate that people with different WVOs perceive messages about bear safety significantly different in their level of importance. This was true for all the messages in this study. Within persuasive communication frameworks, messages that an audience views as more important will increase people's levels of motivation for processing a message through the central route. Results from this research suggest that messages that match people's WVOs increase the message's relevancy to them.

Post-hoc analyses revealed why some of the messages may be more or less important to different WVO typology segments. Messages that appeal to an audiences' stronger WVO were generally considered more important. For instance, messages with a more mutualistic value-framing (Teel, Dietsch, & Manfredo, 2015) were more important to visitors with higher levels of mutualism WVOs. The results from this confirm past suggestions that WVOs are related to the types of information that people seek out or pay attention to (Bright et al., 2000; Hermann et al., 2013). This is similar to the concept of "preference matching" (Tam & Ho, 2005), where information that is more appealing to people is provided in an effort to increase their levels of elaboration. Although many studies using WVO have discussed the value of applying the concept to improve communications, few have examined this assumption (Bright et al., 2000; Crawford et al., 2015; Hermann et al., 2013; Jacobs et al., 2014). This research provides empirical evidence that shows how framing communications about wildlife to match people's WVOs could make communications more effective in influencing behaviors (Ham, 2013; Petty & Cacioppo, 1986; Vezeau et al., 2015).

For protected area managers and other wildlife professionals, messages about wildlife that are crafted with knowledge of audiences' WVOs can be useful in increasing thoughtful processing, thus impacting behaviors. For instance, in dealing with populations who tend to be more like mutualists, messages can be constructed that appeal to the mutualism WVO. Several examples of value-framing (Teel et al., 2015) using WVOs as a framework are provided in Fig. 2 below, and we encourage researchers to test the importance of these and similar messages to different WVO segments in the future. In matching people's WVOs with messaging, it is likely that the target audience will find the message more important, pay more attention to it, and be more motivated to thoughtfully process the message (Bright et al., 2000; Petty & Cacioppo, 1986). As indicated previously, the outcomes of this thoughtful processing, or elaboration, can impact attitudes and potentially
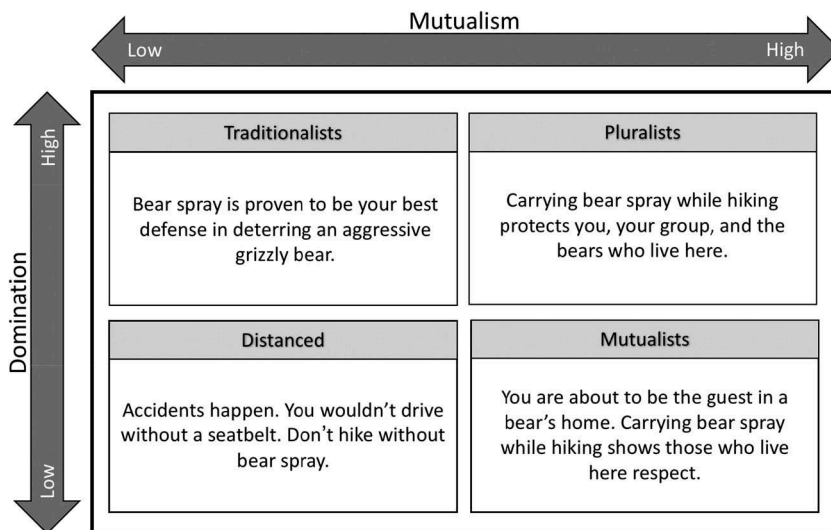
Figure 2. Examples of value-framed (Teel et al., 2015) messages about bear spray designed to increase relevance using wildlife value orientation typology.

change behaviors when applied appropriately (Armitage & Connor, 2001; Ajzen, 1991; Fishbein & Ajzen, 2010; Ham, 2013; Miller, 2017; Petty & Cacioppo, 1986). Even when the audience represents a diversity of WVOs, understanding differing perspectives may help to decrease the distance between opposing views (Hermann et al., 2013). Using WVOs to frame communications can lead to better outcomes when dealing with human–wildlife conflict.

Although research has been done with WVOs in other areas, little research has been conducted with this concept in national parks. Compared to other recent studies in the USA (Teel & Manfredo, 2009), these national park visitors appeared to have higher mutualism WVOs (mean = 5.7) and lower domination WVOs (mean = 3.0). Even the traditionalist typology (which generally has the lowest mean mutualism score) had a mutualism mean score that was above the neutral point (4) in the scale (mean = 4.7). Given the demographic characteristics of national park visitors, this was not surprising. Previous research has linked higher levels of educational attainment, which was present in this sample, as drivers of WVOs that are more mutualistic (Manfredo et al., 2003). People visit national parks is to view wildlife (Manfredo, 2008), and wildlife viewing has been associated with mutualism WVOs (Hrubes et al., 2001). It is likely that national park visitors are generally skewed more towards mutualism WVOs than domination. In YNP, messages that focus on mutualistic framing with bear safety may increase the relevancy of messages to day hikers. As relevancy increases, visitors may be more inclined to engage in safer behaviors (Ham, 2013; Petty & Cacioppo, 1986).

There are some notable limitations to this research. For instance, the process of segmenting out the typology using WVOs is not a standardized process. The differences in the segmentation process from study to study can lead to results that may be more difficult to compare. Nonetheless, most segmentations, including this one, result in a typology that follows the conceptual framework of WVOs. This research used a reduced version of the WVO measures. Another limitation to this research is the weak effect sizes. This can be explained by a variety of reasons. First, there was a relatively high level of mutualism and low level of domination WVOs in all segments of the typology. The higher levels of similarities among WVO typology segments could have reduced the effect size on message importance. Second, message importance scores were negatively skewed, indicating that the scales may have had a ceiling effect in place. Increasing the variance of the scales (see DeVellis, 2003; Klockars & Hancock, 1993; Munshi, 2014; Peterson & Wilson, 1992) or using a ranking measure (likely in conjunction with fewer messages) may increase the ability to detect a more meaningful effect. Dramatic types of messages that may be viewed as controversial were also avoided. Messages that are more explicit and dramatic in their appeals to mutualism or domination WVOs may also result in greater effect sizes. Lastly, the connection between message relevancy and other components of persuasive (e.g., attitudes, behaviors) in this article is a theoretical one, not an empirical one.

Although strategic communication is discussed in the application of WVO studies (Bright et al., 2000; Crawford et al., 2015; Hermann et al., 2013; Jacobs et al., 2014), a more general limitation for this approach is the difficulty in identifying WVO segments. For instance, if we know that people respond well to messages that match their WVOs, how do we identify them? Most day hikers in YNP expressed fairly high levels of mutualism, and targeting this one WVO may be sufficient in increasing message

relevance. However, with more diverse audiences, this becomes a serious limitation. One solution to this may be spatially mapping WVOs (Van Riper & Kyle, 2014). This may provide managers with insights as to where to place certain types of messages so that the framing of the message better matches the WVOs of the users. Future research should continue to explore how to better identify WVOs in a population if we are to seriously consider it as useful concept for framing communications.

Future research should continue to explore how to create effective communication strategies using WVOs. Developing a robust scale for WVOs that is both abbreviated, non-controversial, and consistent in multiple protected areas will be important. Other efforts should apply WVOs to concepts found in communication. For instance, what message types (i.e., perspective taking, anecdotes, humor) are most effective in reaching different types of WVOs (Hall et al., 2010)? An additional line of research can be found in how messaging using a particular WVO appeal influences other components of persuasive communication theories, such as elaboration (Vezeau et al., 2015), attitudes, and behaviors. This would examine whether framing communication strategies using WVOs can affect people's behaviors. Other concepts may also be useful in helping to improve communication strategies. For instance, park value orientations (Borrie, Freimund, & Davenport, 2002; Tanner, Freimund, Borrie, & Moisey, 2008) may be a useful for protected area issues. As future research continues to build, communication strategies can be tailored to specific audiences and achieve better results.

This research should remind managers and other natural resource professionals that people do not always do what they know about; they do what they care about. The assumption that "if people only knew what we wanted them to know, then they would act how we want them to" is simply not true, and providing factual information alone is unlikely to influence people's behaviors (Schultz, 2011). People need reasons to act, and concepts like WVOs serve as a way for us to better engage an audience and achieve greater effectiveness in communication strategies.

Conclusion

WVOs have been useful for understanding the relationship between people and wildlife, and understanding human–wildlife relationships can help achieve success in park and protected area management (Teel et al., 2010). WVOs can facilitate developing effective persuasive communication strategies that recognize that messages about wildlife will differ in their level of importance to visitors. WVOs can increase the importance of messages to visitors. By matching messages about wildlife to an audience's WVO, it is likely that the audience will find the information to be more important and become motivated to elaborate on the message. This thoughtful processing can lead to better outcomes. By using this theoretical approach to communication with visitors, communication becomes more likely to achieve management goals.

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