Trust Mediates Conservation-Related Behaviors

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Abstract

In this article we explore the influence that a perceived connection between a natural resource management agency and individual citizens has upon conservation-related behaviors on public lands, offering an extension of psychology's examination of environmental behaviors. Our emphasis is upon perceived value similarity and resulting trust between citizens and the USDA Forest Service, defined through the salient values similarity model. On the basis of a retrospective analysis of four studies examining public views on threatened and endangered species management on forest lands, we explore the hypothesis that trust will influence public engagement in conservation-related behaviors. We offer evidence suggesting that trust influences perceptions of messages the USDA Forest Service provides regarding risks to habitat, perception of recommended approaches to addressing environmental risk, acceptance of management actions to reduce environmental risks, and engagement of publics in conservation efforts. Findings show that trust is associated with a range of attitudes and behaviors related to conservation, all suggestive of forms of engagement in conservation. We conclude that the relationship between individuals and natural resource management agencies is an underexplored area of inquiry in conservation-related research, one that merits attention given the demonstrated value of trust. Conservation-related organizations, natural resource management agencies, and related entities can benefit from the findings by ensuring that their efforts address trust building and trust maintenance as a part of their ongoing interactions with publics and endeavors to foster conservation-related behaviors.

Public participation in conservation efforts is essential to the protection of natural resources. Publics play a key role in conservation of public lands in a wide variety of ways, including reducing their own environmental footprint and thereby decreasing their demand on natural resources; contributing money, materials, and time to organizations that help protect natural resources; educating others about environmental issues and how to be more responsible; voting that lends support to environmental initiatives; and volunteering directly to help rehabilitate, protect, and conserve natural resources. While some activities have become relatively easy and are common practice (such as recycling), others remain somewhat rare (Dunlap, 2010). These public roles in conservation are essential to effective natural resource management. In caring for the land in various ways, concern about the environment is directly expressed, and further connection may be developed. This active caring can extend to a sense of community and offers numerous benefits to individual and society, moving beyond the boundaries of natural resource issues (Hinds & Sparks, 2009; Marcus et al., 2010; Westphal, 2003).

Psychological studies have revealed myriad factors influencing likelihood of engagement in conservation-related activities. Many studies have focused on the individual actor, including those that examined individual aspects of personality. One example of an individual focus in environmentally related inquiries is future orientation, which is a tendency to focus on long-term implications of behavior, including tradeoffs of short-term gain for future benefits. Future orientation has been found to influence a variety of environmental behaviors, including use of private automobiles vs. public transportation (Joireman et al., 2001, 2004), and recycling and waste reduction (Ebreo & Vining, 2001).

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Another example of the individual level focus is environmental identity salience (Clayton, 2003). This is the perceived connection between the self and the environment, such that a stronger connection to the environment is associated with more environmentally responsible behavior. Clayton (2003) conducted a number of studies demonstrating the link between environmental identity and proenvironmental behaviors. Winter & Chavez (2008) adapted Clayton's scale and reported a connection between environmental identity and preferences for how natural areas should be managed, especially in expressing support for protection of natural areas. Implicit and explicit connections to nature have also been examined, along with inquiries into how these connections may be fostered by experiences with nature (see, e.g., Bruni et al., 2008; Schultz & Tabanico, 2007).

An alternative approach has been to examine the relationship between individuals and specific places, presented as connection to place and place meanings. Considered an emotional bond to a place (Farnum et al., 2005; Knez, 2005), place attachment is helpful in understanding how people respond to a particular setting (Schroeder, 2002). For example, Twigger-Ross & Uzzell (1996) reported that residents not attached to their community were more likely to be neutral or have a negative evaluation of their own residential area. Place attachment may extend to place identity, or a perceived direct connection to a place as part of oneself (Knez, 2005). This has been suggested as key to understanding public responses to natural resource issues and decision making as risks to place may be seen as threats to one's identity (Cheng et al., 2003).

In this article we extend the examination of proenvironmental behaviors as we explore the influence that a perceived connection between a natural resource management agency and individual citizens has upon engagement in conservation efforts. Our emphasis is upon perceived salient value similarity and trust between citizen and natural resource-managing agency, defined through the salient values similarity model. This model suggests that when publics believe an agency and or its members hold similar salient values, goals, and views, trust results (Earle & Cvetkovich, 1995; Siegrist et al., 2000). The discussion of salient values points to the importance of the belief that members within an agency tend to align with an individual's views on important goals and processes for a particular situation (Siegrist et al., 2000). Our focus is on social trust, which is the willingness to rely on a collection of individuals with responsibilities for making decisions or taking actions, in this case to manage natural resources (Siegrist et al., 2000). This is distinguished from interpersonal trust (based on individual relationships such as with family members and friends) and generalized trust (which is a personal tendency to find other individuals worthy of trust). Using this approach, trust is more specific than general and involves judgment about particular actions (see Langer, 2002). Social trust involves the willingness to trust an institution and the members operating within it, sometimes in the absence of direct personal experience with its members (Offe, 1999). Discussing this approach, Offe argues for two routes to enhancing social trust, truth-telling and fairness (referred to as a passive route), and promise-keeping and solidarity (referred to as an active route). Engaging individuals in collaborative planning and land management would rely more on the second form, whereas interactions with a broader public would rely on the first form. We would contend that both are important to interactions between natural resource management agencies and publics.

Elsewhere we have shown that social trust seems resilient in the face of USDA Forest Service actions seemingly contradictory to salient shared values, so long as the inconsistency appears legitimate (see, e.g., Cvetkovich & Winter, 2007). Social trust has been reported as an essential component to effective risk management, affecting a range of public perceptions and actions, including belief in risk-related messages, acceptance of risk-related management actions, and compliance with risk regulations (see Cvetkovich & Lofstedt, 1999; Slovic, 2000).

On the basis of a retrospective analysis of four studies examining public views on threatened and endangered species management on forest lands, we explore the hypothesis that trust will influence public engagement in conservation efforts. These studies represent a combination of qualitative and quantitative approaches, and range from a watershed-based study involving recreationists to a four-state general population survey in the west. By summarizing the findings on trust in the USDA Forest Service and public engagement in conservation, we demonstrate the importance of relationships between publics and natural resource management agencies. We select findings from each study that demonstrate a range of relationships between trust, salient value similarity, and attitudes and behaviors linked to conservation activities on forest lands. The analysis represents an opportunity to reflect on a series of studies conducted by the authors over a number of years, which when considered together, offer an opportunity to examine the influence of relationships between the USDA Forest Service and the public it serves.

Method

Four studies are drawn from in this article. The studies were completed over a number of years by the authors and then the preexisting datasets were examined to inform the analysis presented in this article. Each will be briefly described with additional information available in the in-depth reports cited (see Table 1).

Table 1. Summary Information for the Four Studies

STUDY NAME	*N*	LOCATION	METHOD USED	FULL PUBLICATION OR REPORT
Colville	82	Colville Watershed	Onsite survey of recreationists	Cvetkovich & Winter (1998)
4 Forest	701	Southern California	Onsite survey of recreationists	Winter & Knap (2001)
Community	100	Southern California	Focus groups and surveys of community residents	Cvetkovich & Winter (2002, 2003)
Southwest	1807	Arizona, California, Colorado, New Mexico	Telephone survey of state residents	Cvetkovich & Winter (2004), Winter & Cvetkovich (2008)

Study 1

The *Colville* study involved an onsite survey of recreationists visiting a watershed (Table 1). The study examined participant perceptions of water quality problems on the forest and acceptability of management approaches that might be used to improve water quality.

Study 2

An onsite survey of recreationists was also used in the *4 Forest* study involving visitors to southern California National Forests (Table 1). The focus of this study was on preferred ways to manage recreation for the protection of threatened and endangered species.

Study 3

Study 3 involved residents of communities next to forest areas affected by a plan to protect threatened and endangered species habitat. Residents participated in focus group sessions and, as a part of these sessions, completed self-administered surveys (*Community*).

Study 4

In the fourth and final study drawn from in this article (*Southwest*), residents of four southwestern states participated in a survey exploring perceptions of management actions to protect threatened and endangered species.

Methodological approaches, sampling constraints, and complete explanations of other measures used in each study can be found in the citations provided.

Trust measurement and trends among the four studies

In all four studies, respondents tended to trust, rather than distrust, the USDA Forest Service regarding threatened and endangered species management on the forest of interest[1] (Table 2). In each the salient values items and trust were averaged to create a trust scale. Sections that follow use this combined scale of values similarity and trust—from here forward referred to as the trustscale (Table 2). These items were first proposed by Earle & Cvektovich (1995) when discussing salient value similarity and trust, and the treatment of items as an average can be found in multiple studies by the authors (for a further discussion of how these items are conceptualized and related, see Cvetkovich & Winter, 2007).

How is trust related to perception of messages about risks to habitat?

Effective management of natural resources in areas with public access requires the ability to communicate about actions or behaviors that may represent a risk to the environment. In the Colville study, recreationists were shown four posters, three created for the study presenting information on disposing of litter, extinguishing fires, and keeping vehicles on roads, and one poster already in use focused on fire and litter. They were asked to rate each on likelihood that they would stop and read the poster, personal relevance, meaningfulness of information, and likelihood that the poster would lead to behavior change. We found a significant positive association between the trustscale and the poster ratings (Table 3). However, ratings of likelihood of behavior change based on the messages in the posters were not related to the trustscale.

Even though participants in the Colville study did not demonstrate an association between ratings of trust and expected behavioral

[1]Trust was measured using an 8 point scale, 1 = do not trust at all and 8 = trust completely.

Table 2. Summary Information on Trust, Individual Salient Values Similarity Items, Cronbach's Alphas for Trustscale, and Descriptives for Trustscale

STUDY	TRUST[a] M	SALIENT VALUES SIMILARITY[b]	α	TRUSTSCALE M	TRUSTSCALE SD	*N*
Colville	6.33	Share values, same goals, supports views	.77	6.43	1.55	80
4 Forest	5.64	Share values, same goals, supports views, thinks like me	.92	5.61	1.61	690
Community	4.64	Share values, same goals, supports views	.94	4.70	1.90	100
Southwest	5.80	Share values, same goals, supports views	.88	5.63	1.79	1780

[a]Rated on a 1–8 scale, where 1 = does not trust and 8 = trusts completely.

[b]Rated on a 1–8 scale, where 1 = lacks similar values and 8 = similar values.

change from posters, the 4 Forest study findings revealed an association between perceived effectiveness of messages and trust. We tested this by having respondents rate eight messages, four positively worded and four negatively worded, providing behavioral instruction for recreationists. Respondents with greater levels of trust believed that an assortment of messages would be more effective than those with lower levels of trust rating the same messages (Table 4).

How is trust related to perceptions of management actions?

Moving beyond aspects related to communication effectiveness, perceptions of management interventions that the USDA Forest Service could use to address recreation impacts were explored. Approaches involved information-related strategies and strategies employing restrictions on recreation use. For this set of analyses, we incorporated two additional measures, degree of concern about

Table 3. Trustscale and Perception of Messages About Behaviors That Would Risk Habitat

	M	SD	*N*	CHANGE	PEARSON CORRELATIONS MEANINGFUL	PEARSON CORRELATIONS RELEVANT	READ
Trustscale				.18[NS]	.31**	.25*	.27*
Read[a]	5.32	1.61	78	.39***	.42***	.33**	
Relevant[b]	5.92	1.29	76	.45***	.76***		
Meaningful[c]	6.07	1.25	77	.55***			
Change[d]	4.18	1.51	77				

Note: each poster rating represents average of ratings on the four posters presented to participants.

*$p < .05$; **$p \leq .01$; ***$p \leq .001$.

[a]How likely is it that you would stop to read it? Rated on 1–7 scale, 1 = not likely at all, 7 = very likely.

[b]How personally relevant is the topic? Rated on 1–7 scale, 1 = not relevant at all, 7 = very relevant.

[c]How meaningful is the information? Rated on a 1–7 scale, 1 = meaningless, 7 = meaningful.

[d]How likely would this be to change a person's behavior? Rated on a 1–7 scale, 1 = not likely at all, 7 = very likely.

Table 4. Perceived Effectiveness of Eight Messages That Would Be Placed on Signs in Forest Setting by Levels of Trustscale

MESSAGE[a]	ANOVA	MEAN EFFECTIVENESS[b] BY LEVELS OF TRUSTSCALE[c]		
		LOW	MODERATE	HIGH
Don't leave your fire unattended	2, 667 = 7.54	5.93	6.34	6.69
Pay attention to your fire	2, 664 = 9.68	5.12	5.26	6.05
Throw your litter in a trash container	2, 664 = 9.13	5.67	5.99	6.52
Don't throw your litter on the ground	2, 664 = 11.91	5.03	5.44	6.09
Park in designated areas	2, 668 = 15.46	5.55	5.90	6.61
Don't park outside designated areas	2, 663 = 18.53	4.91	5.40	6.19
Don't violate posted rules during your visit	2, 662 = 26.76	4.48	5.04	6.07
Observe posted rules during your visit	2, 661 = 24.56	5.09	5.43	6.50

[a]Each message started with "please."

[b]Rated on a scale from 1–8, 1 = very ineffective, 4 = somewhat effective, 8 = very effective.

[c]Levels of the Trustscale were grouped by average (M) scores: Low = 1–5, Moderate = 5.2–6.4, High = 6.5–8.

threatened and endangered species on the forest, and perceived personal impact of each intervention rated. Interventions were then rated for expected effectiveness in reducing impacts on habitat, and then for approval of each intervention.

Between 24% and 42% of the variance in perceived effectiveness of management interventions that involved restrictions on recreation use or access was explained by the trustscale, concern over threatened and endangered species, and perceived personal impact (Table 5). Trustscale was not a significant individual contributor to the prediction of perceived effectiveness in the Community study, but was significant in the other two studies. Less of the overall variance was accounted for in perceived effectiveness of providing information, ranging from 11% to 21%. In the Community study, the trustscale was the only significant individual contributor to the prediction of information effectiveness, whereas all predictors were significant in the other two studies. The trustscale served as a modest individual contributor independent of the other variables based on the semipartial correlations (Table 5).

A similar pattern in prediction of approval of interventions was found (Table 6). Between 23% and 47% of the variance in approval of management interventions that involved restrictions on recreation use or access was explained by the trustscale, concern over threatened and endangered species, and perceived personal impact (Table 6). Trustscale was not a significant individual contributor to the prediction of approval in the Community study, but was significant in the other two studies. Prior visits to national forests did not contribute significantly to the prediction of approval in the Southwest study, either in the approval of restrictions or information. It appears that prior visit did not function the same as perceived impact when used as an independent variable. Less of the overall variance was accounted for in approval of providing information, ranging from 12% to 33%. The trustscale served as a modest individual contributor independent of the other variables based on the semipartial correlations (Table 6).

What qualitative data gathered from the studies suggest about trust and engagement

Open-ended comments gathered provide valuable insight into the direct link between trust and engagement with conservation efforts on National Forests. In the 4 Forest study a respondent (#480)

Table 5. Regressions Predicting Perceived Effectiveness of Interventions to Protect Threatened and Endangered Species

STUDY	INTERVENTION	DEPENDENT VARIABLE	B	SE B	β	sr^2
4 Forest	Make restrictions on recreation use or access	Trustscale	.17	.04	.15	.02
	($R^2 = .39$)	Concern[a]	.22	.04	.21	.03
		Personal impact[b]	.45	.03	.49	.23
	Provide information	Trustscale	.30	.05	.27	.06
	($R^2 = .21$)	Concern	.15	.04	.16	.02
		Personal impact	.21	.03	.22	.05
Community	Make restrictions on recreation use or access	Trustscale	.16	.11	.13	.02
	($R^2 = .42$)	Concern	.42	.11	.35	.11
		Personal impact	.46	.10	.43	.18
	Provide information	Trustscale	.28	.10	.30	.09
	($R^2 = .11$)	Concern	.04	.10	.04	<.01
		Personal impact	.10	.10	.11	.01
Southwest	Make restrictions on recreation use or access	Trustscale	.27	.02	.26	.06
	($R^2 = .24$)	Concern	.27	.02	.31	.09
		Ever visited NF[c]	.32	.10	.07	<.01
	Provide information	Trustscale	.28	.03	.25	.05
	($R^2 = .13$)	Concern	.13	.02	.14	.02
		Ever visited NF	.65	.12	.12	.01

[a]Rated on a 1–8 scale, where 1 = not at all concerned and 8 = very concerned.

[b]Rated on a 1–8 scale, where 1 = no personal impact and 8 = excess personal impact.

[c]Whether or not person had visited a National Forest (NF) in their state was used as a proxy measure for personal impact for this comparison as the impact question was not included in the telephone survey.

suggested, "The Forest Service should get the public more involved in the maintenance of the National Forest. There are lots of people that would love to help . . ." This person had a 6.4 on the trustscale, a score above the average (of 5.6) for this study. Another respondent (#161), with a 6.2 on the trustscale, wrote, "I'd like to see forest users comply with rules regarding trash, etc. Maybe cleaner restrooms. I would like to volunteer translating signs into Spanish." Here, a person with relatively high trust was offering direct assistance to the forest managers.

Others offered more general remarks on trust and involvement. A participant in the Community study commented, "We would [accept Forest Service restrictions on forest use] if we had trust that it would work, but the trust isn't there" (Cvetkovich & Winter, 2002, p. 30). Another said, "I would like to see more active involvement by the

Table 6. Regressions Predicting Approval of Interventions to Protect Threatened and Endangered Species

STUDY	INTERVENTION	DEPENDENT VARIABLE	B	SE B	β	sr^2
4 Forest	Make restrictions on recreation use or access	Trustscale	.13	.04	.10	.01
	($R^2 = .47$)	Concern[a]	.30	.04	.27	.06
		Personal impact[b]	.55	.03	.54	.29
	Provide information	Trustscale	.19	.04	.19	.03
	($R^2 = .31$)	Concern	.25	.04	.19	.05
		Personal impact	.32	.03	.36	.13
Community	Make restrictions on recreation use or access	Trustscale	.03	.11	.02	<.01
	($R^2 = .43$)	Concern	.40	.12	.31	.09
		Personal impact	.60	.10	.52	.26
	Provide information	Trustscale	.21	.07	.29	.08
	($R^2 = .33$)	Concern	.21	.07	.28	.07
		Personal impact	.24	.07	.33	.11
Southwest	Make restrictions on recreation use or access	Trustscale	.24	.02	.23	.05
	($R^2 = .23$)	Concern	.31	.02	.35	.11
		Ever visited NF[c]	.10	.10	.02	<.01
	Provide information	Trustscale	.20	.02	.21	.04
	($R^2 = .12$)	Concern	.18	.02	.22	.04
		Ever visited NF	.11	.10	.02	<.01

[a]Rated on a 1–8 scale, where 1 = not at all concerned and 8 = very concerned.

[b]Rated on a 1–8 scale, where 1 = no personal impact and 8 = excess personal impact.

[c]Whether or not person had visited a National Forest (NF) in their state was used as a proxy measure for personal impact for this comparison as the impact question was not included in the telephone survey.

community. These are the lands of the American people. The public will not accept decisions if they have no participation in the process" (Cvetkovich & Winter, 2002, p. 36).

Discussion

Trust has been shown to be a desirable asset in risk management and in this article has been extended to the discussion of public engagement in conservation-related behaviors. In so doing we have offered an extension of the primary foci of conservation literature, by moving beyond individual, and relationships between individuals and places. Findings presented suggest that trust affects believability of messages regarding actions that have an impact upon the environment. This provides supporting evidence for the recent argument of mistrust as a psychological barrier to climate change action (Swim et al., 2009), though suggests that mistrust or outright distrust might not always be present when considering government agencies. Our

data show a tendency toward trust rather than distrust, though it is important to note that a general trust in government and a more specific trust in the USDA Forest Service to manage threatened and endangered species should be different in keeping with Langer (2002). Not only are messages and information affected by trust in the USDA Forest Service, but also it appears that perceived effectiveness and approval of planned or proposed actions are also affected. This suggests that trust remains an important component of effective conservation-related endeavors and adds another dimension to the discussion of how proenvironmental behaviors may be fostered and maintained.

However, it is important to note, that although trust was demonstrated as an important variable in findings reported, it was not the only significant or influential contributor in the prediction of approval and perceived effectiveness of actions. For example, concern about threatened and endangered species was quite influential in the reported regressions. Motivators of conservation behavior, including intentions as well as actual actions, are clearly complex and driven by many things, part of which were discussed earlier as foci of psychological research on environmental behaviors. Our own work reported elsewhere has reported on the contributing roles of other factors, such as concern or knowledge about the specific topic (see, e.g., Cvektovich & Winter, 2007). The aim here is not to argue that trust building and trust maintenance should be the primary focus of conservation-related endeavors, but to show that it should be a consideration in the development of strategies to address environmental issues and accompanying behavioral and societal change.

In conclusion, researchers interested in conservation-related behaviors may wish to consider the role of agency–public interactions in their work exploring ways to support and increase environmentally responsible behaviors—in particular, the role of trust and perceived similarity of values in engagement in conservation efforts. Agencies focused on natural resource management, and agencies and groups focused on conservation-related endeavors can benefit from findings offered here by attending to trust-building and trust-maintenance components of interactions with publics and citizens. This applies to collaborative efforts as well as communications (Offe, 1999). Successfully meeting our most pressing environmental issues, including climate change and its related environmental and social effects, requires attention to relationships with publics and the implications of the presence or absence of trust (Swim et al., 2009). Given the importance of individual behavior in conservation efforts, and the importance of believability of messages delivered that would inform effective conservation-related actions, trust seems essential to efforts to engage society in protecting the environment.

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REFERENCES

Bruni, C. M., Fraser, J., & Schultz, P. W. (2008). The value of zoo experiences for connecting people with nature. *Visitor Studies, 11*(2), 139–150.

Cheng, A. S., Kruger, L.E., & Daniels, S. E. (2003). "Place" as an integrating concept in natural resource politics: propositions for a social science research agenda. *Society and Natural Resources, 16*(2), 87–104.

Clayton, S. (2003). Environmental identity: a conceptual and an operational definition. In: S. Clayton & S. Opotow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 45–65). Cambridge, MA: Massachusetts Institute of Technology.

Cvetkovich, G. T., & Winter, P. L. (1998). *Community reactions to water quality problems in the Colville National Forest: Final report.* Submitted to the Colville National Forest, Washington, and the San Dimas Technology and Development Center, San Dimas, CA, 32 p.

Cvetkovich, G. T., & Winter P. L. (2002). *Social trust and the management of threatened and endangered species: A study of communities of interest and communities of place.* PSW-RP-247. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture, 65 p.

Cvetkovich G. T., & Winter P. L. (2003). Trust and social representations of the management of threatened and endangered species. *Environment and Behavior, 35*(2), 286–307.

Cvetkovich G. T., & Winter P. L. (2004). Seeing eye-to-eye on natural resource management: trust, value similarity, and action consistency/justification. In P. T. Tierney, D. J. Chavez (technical coordinators), *Proceedings of the Fourth Social Aspects and Recreation Research Symposium* (pp. 46–50). San Francisco, CA: San Francisco State University.

Cvetkovich G. T., & Winter P. L (2007). The what, how, and when of social reliance and cooperative risk management. In M. Siegrist, T.C. Earle, & H. Gutscher (Eds), *Trust in cooperative risk management: Uncertainty and skepticism in the public mind* (pp. 187–209). London: Earthscan.

Cvetkovich, G., & Lofstedt, R. E. (Eds.) 1999. *Social trust and the management of risk.* London, UK: Earthscan Publications Ltd.

Dunlap, R. E. (2010). *At 40, environmental movement endures, with less consensus.* Retrieved from www.gallup.com/poll/127487/. Last accessed April 27, 2010.

Earle T. C., & Cvetkovich G. T. (1995). *Social trust: Toward a cosmopolitan society.* Westport, CT: Praeger.

Ebreo, E., & Vining, J. (2001). How similar are recycling and waste reduction? Future orientation and reasons for recycling waste as predictors of self reported behavior. *Environment and Behavior, 33*, 424–448.

Farnum, J., Hall, T., & Kruger, L. E. (2005). *Sense of place in natural resource recreation and tourism: An evaluation and assessment of research findings.* Gen Tech. Rep. PNW-GTR-660. Albany, CA: Pacific Northwest Research Station, Forest Service, U.S. Department of Agriculture.

Hinds, J., & Sparks, P. (2009). Investigating environmental identity, well-being, and meaning. *Ecopsychology, 1*(4), 1–6.

Joireman, J. A., Van Lange, P. A. M., & Van Vugt, M. (2004). Who cares about the environmental impact of cars: those with an eye toward the future. *Environment and Behavior, 36*(2), 187–206.

Joireman, J.A., Van Lange, P. A. M., Van Vugt, M., Wood, A., Vander Leest, T., & Lambert, C. (2001). Structural solutions to social dilemmas: a field study on commuter's willingness to fund improvements in public transit. *Journal of Applied Social Psychology, 31*(3), 504–526.

Knez, I. (2005). Attachment and identity as related to a place and its perceived climate. *Journal of Environmental Psychology,* 25, 207–218.

Langer, G. (2002). Trust in government: to do what? *Public Perspective.* 13(4), 7–10.

Marcus, B. J., Omoto, A. M., & Winter, P. L. (2010). *Conceptualizing environmentalism: A qualitative approach.* Society for Personality and Social Psychology, Eleventh Annual Meeting, Las Vegas, NV, Jan. 28–30.

Offe, C. (1999). How can we trust our fellow citizens? In M. E. Warren (Ed.), *Democracy & trust* (pp. 42–87). Cambridge, UK: Cambridge University Press.

Schroeder, H. (2002). Experiencing nature in special places: surveys in the north-central region. *Journal of Forestry, 100*(5), 8–14.

Schultz, P. W., & Tabanico, J. (2007). Self, identity, and the natural environment: exploring implicit connections with nature. *Journal of Applied Social Psychology, 37*(6), 1219–1247.

Siegrist, M., Cvetkovich, G., & Roth, C. (2000). Salient value similarity, social trust, and risk/benefit perception. *Risk Analysis, 20*(3), 353–362.

Slovic, P. (2000). Trust, emotion, sex, politics, and science: surveying the risk-assessment battlefield. In: P. Slovic (Ed). *The perception of risk* (pp. 390–412). Sterling, VA: Earthscan Publications, Ltd.

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., Stern, P, & Weber, K. (2009). *Psychology and climate change: Addressing a multi-faceted phenomenon and set of challenges.* A report by the American Psychological Association's Task Force on the interface between psychology and global climate change. Retrieved from www.apa.org/science.

Twigger-Ross, C. L., & Uzzell, D. L. (1996). Place and identity processes. *Journal of Environmental Psychology, 16*, 205–220.

Westphal, L. M. (2003). Urban greening and social benefits: a study of empowerment outcomes. *Journal of Aboriculture, 29*(3), 137–147.

Winter, P. L., & Chavez, D. J. (2008). Wildland recreationists' natural resource management priorities and preferences: a connection to environmental identity. In: D. J. Chavez, P. L. Winter, & J. D. Absher (Eds.), *Recreation visitor research: Studies of diversity* (pp. 163–174). Gen. Tech. Rep. PSW-GTR-210. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Winter, P. L., & Cvetkovich, G. T. (2008). Southwesterners' views of threatened and endangered species management: does racial/ethnic diversity make a difference? In: D. J. Chavez, P. L. Winter, & J. D. Absher (Eds.), *Recreation visitor research: Studies of diversity* (pp. 97–111). Gen. Tech. Rep. PSW-GTR-210. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Winter, P. L., & Knap, N. (2001). *An exploration of recreation and management preferences related to threatened and endangered species: Final report for the Angeles, Cleveland, Los Padres and San Bernardino National Forests.* Unpublished report, submitted to the SCCS core team and the four southern California National Forests.

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