

Value similarity and trustworthiness predict support for waterfowl management policy

Jake G. Spears | Kenneth E. Wallen  | Douglas C. Osborne

Arkansas Forest Resources Center, College of Forestry, Agriculture and Natural Resources, University of Arkansas at Monticello, 110 University Court, Monticello, AR 71656, USA

Correspondence

Kenneth E. Wallen, University of Idaho, Department of Natural Resources and Society, 975 W 6th Street, Moscow, ID 83844, USA.
Email: wallenk3@gmail.com

Present address

Jake G. Spears, Ducks Unlimited, Inc., One Waterfowl Way Memphis, TN 38120, USA.

Kenneth E. Wallen, Idaho Department of Fish and Game, 600 South Walnut Street, Boise, ID 83712, USA.

Funding information

USDA NIFA McIntire-Stennis Capacity Grant, Grant/Award Number: ARK02509

Abstract

Modern wildlife agencies increasingly emphasize efforts that facilitate the social feasibility of policy via cooperation and support among affected publics. Values and trust are critical components of policy support. Value similarity is an established concept that maps well to indicators of policy support whereas trustworthiness has received limited research attention, particularly in comparison to the variably defined concept of trust. We present a conceptual model that assesses the relationships among salient value similarity (SVS), trustworthiness (ability and benevolence), and support for wildlife policy in Arkansas, USA. We used structural equation modeling (SEM) to test our model among a sample of resident waterfowl hunters ≥ 18 years old ($n = 1,596$). Respondents rated the value similarity of Arkansas Game and Fish Commission (AGFC), AGFC's trustworthiness in relation to waterfowl management, and support for waterfowl policy. The measurement model fit observed data well and the structural model indicated good fit between the conceptual model and observed data. Our findings indicate SVS positively influenced perceptions of trustworthiness that, in turn, positively influenced support for waterfowl policy. The significant positive influence SVS and trustworthiness have on policy support suggest important metrics agencies can proactively track and manage among affected publics. Furthermore, knowledge of how value similarity and trustworthiness interact with policy support can help agencies target involvement and engagement

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2022 The Authors. *Wildlife Society Bulletin* published by Wiley Periodicals LLC on behalf of The Wildlife Society.

processes that improve social feasibility, particularly when a policy does not correspond with current expectations but are intended to benefit the long-term socioecological sustainability of a resource.

KEYWORDS

Anas platyrhynchos, Arkansas, greentree reservoir, human dimensions, trust, wildlife management

As modern wildlife agencies increasingly emphasize social feasibility, factors that facilitate cooperation and consensus are critical (Siegrist et al. 2000, Riley et al. 2002). Values and trust are 2 factors that relate to metrics important to wildlife agencies such as attitude, risk perception, and policy support (Cvetkovich and Winter 2003, Smith et al. 2013, Riley et al. 2018, Vaske et al. 2021). Value similarity and trustworthiness are specific concepts that reflect an individual's perception of a person or institution, such as their assessment of a wildlife agency's qualities or characteristics (Vaske et al. 2007, Sharp et al. 2013, Hamm 2017). Whereas general values and trust indicators measure the disposition of the trustor (user), measures of value similarity and trustworthiness focus, instead, on the qualities or characteristics of the trustee (agency). In practical terms, the distinction shifts priority to factors an agency has more control over rather than the dispositions or preferences of its users. Therefore, knowledge of how value similarity and trustworthiness influence public support for policy may help wildlife agencies design participation, engagement, or communication initiatives. Moreover, high levels of value similarity and trustworthiness among affected publics may allay concerns and improve the social feasibility of new policies, particularly policies that do not correspond with current expectations but benefit the long-term sustainability of a public trust resource.

The Lower Mississippi Alluvial Valley (LMAV) of Arkansas, USA is a common waterfowl hunt destination in the Mississippi Flyway (Figure 1), particularly for hunters who target mallards (*Anas platyrhynchos*) and wood ducks (*Aix sponsa*; Raftovich et al. 2018). The LMAV contains a matrix of private and public bottomland hardwood (BLH) forest that, prior to agricultural development, had a natural history of seasonal flood regimes. In many areas across the LMAV, historic flood regimes have been replaced by managed impoundments and flooding practices that provide wintering waterfowl habitat and hunt opportunity called greentree reservoirs (GTR; Wigley and Filer 1989). Traditional GTR management prescribes flooding weeks prior to the waterfowl season and constant water levels throughout the winter months. But GTR practices are known to negatively affect forest health and species composition (Broadfoot 1967, Arkansas Game and Fish Commission 2017). Negative effects include basal swelling, crown dieback, reduced acorn production, low regeneration rates, and mortality of oak species that produce the majority of acorns consumed by waterfowl (Young et al. 1995, King et al. 1998). Traditional GTR flood regimes also encourage forest communities to shift to more water-tolerant species such as overcup oak (*Quercus lyrata*) that produces acorns too large for waterfowl consumption (Newling 1982, Keeland et al. 2010).

Decades of forest health decline spurred the Arkansas Game and Fish Commission (AGFC) to implement a management policy in 2018 to return historic flood dynamics to GTRs (AGFC 2017). The feasibility of AGFC's new GTR policy was premised on it being ecologically advantageous and economically prudent, but public support and relevant antecedents of support were not assessed prior to policy implementation to understand social feasibility (AGFC 2018). To understand support for new GTR policy in Arkansas, we focused on relevant values and trust antecedents, assessing waterfowl hunters' perceptions of value similarity between themselves and the agency, their assessment of the agency's trustworthiness, and the relationships between value similarity and trustworthiness to predict policy support. The objective was to test a conceptual model of the relationships among salient value similarity (SVS), trustworthiness (ability and benevolence), and policy support (Figure 2). We ask, within a target population of Arkansas resident waterfowl hunters, how does SVS relate to the trustworthiness dimensions of ability and benevolence (RQ1) and do those trustworthiness dimensions mediate the relationship between SVS and support (RQ2). Building on the work of Vaske

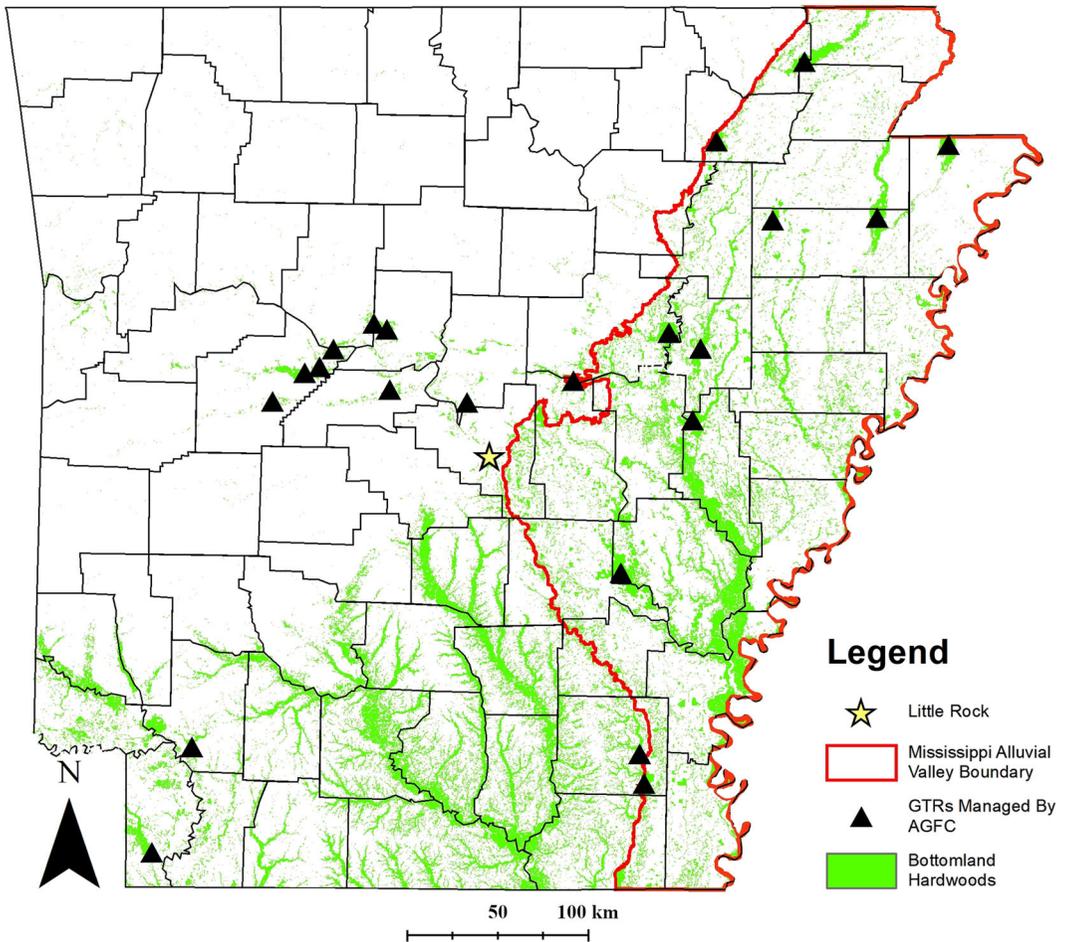


FIGURE 1 Study area for Lower Mississippi Alluvial Valley, Arkansas, USA, 2018, including bottomland hardwood forests and public land greentree reservoirs managed by the Arkansas Game and Fish Commission.

et al. (2007), Sharp et al. (2013), and Hamm (2017), we hypothesize SVS has a significant, positive relationship with both trustworthiness variables (H1-2), ability and benevolence have a significant, positive relationship with support (H3-4), and SVS has a significant, positive indirect effect on support through both trustworthiness variables (H5-6).

Value similarity

Values are desirable trans-situational goals (end states) that vary in their importance as guides of one's behaviors or evaluations (Schwartz 1992). Values remain relatively unchanged over time, tend to predict other cognitive phenomena and actions, and are frequently assessed in human dimensions research (Rokeach 1973, Wallen and Landon 2021). Moreover, trust originates from perceived similarity rather than deliberate reasoning or direct knowledge (Earle and Cvetkovich 1995). That is, trust in an institution (agency) is based whether an individual believes the institution shares similar goals and values. The salient value similarity approach is also termed value congruency, salient similarity, perceived shared values, and perceived similarity (Siegrist et al. 2000, Cvetkovich and Winter 2003, Earle 2004).

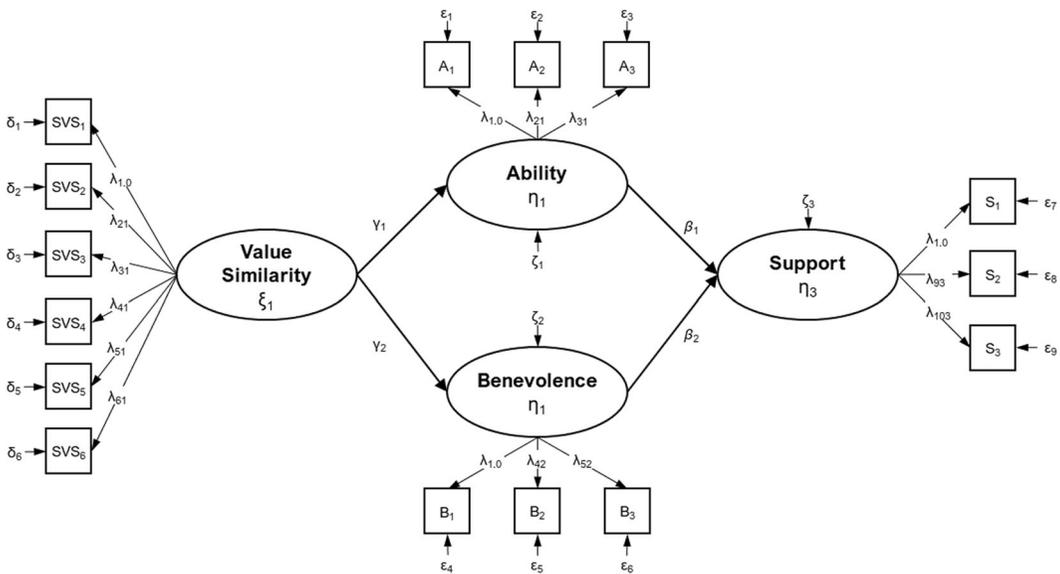


FIGURE 2 Graphical representation of structural equation model to estimate influence of salient value similarity and trustworthiness (ability and benevolence) on support for Arkansas Game and Fish Commission waterfowl policy, Arkansas, USA, 2018. Data are from an online questionnaire (sample $n = 1,596$) of licensed resident Arkansas waterfowl hunters ≥ 18 years old in 2018. Nomenclature: ξ = exogenous latent, η = endogenous latent, λ = factor loading, γ/β = coefficient, $\varepsilon/\delta/\zeta$ = error term.

Perceived similarity often predicts trust as people who perceive an agency to share their values tend to trust the agency (Siegrist et al. 2000). For example, assessments of hypothetical management scenarios found that the agency's actions are evaluated in accordance with levels of perceived value similarity, in that the actions of agencies believed to shares the respondents' values were evaluated more positively than actions taken by dissimilar agencies (Slovic 1993, Cvetkovich et al. 2002, White et al. 2003). Vaske et al. (2007) reported that respondents who shared the same values as an agency trusted the agency more in the context of wildfire management. In the context of the hunting community, Needham and Vaske (2008) reported, across multiple states, that value similarity positively correlated with trust in the agency to manage chronic wasting disease (Vaske et al. 2021). In addition to being a predictor of trust, value similarity can also serve to inform our understanding of the acceptance or approval levels of wildlife management practices (Vaske et al. 2007, Sponarski et al. 2014).

Trustworthiness

Rousseau et al. (1998, p. 395) define trust as "a psychological state comprising the intention to accept vulnerability, based upon positive expectations of the intentions or behaviour of another". Mayer et al. (1995, p. 712) state trust is "the willingness of a party to be vulnerable to another party based on the expectation that another will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". Siegrist et al. (2000, p. 354) similarly define social trust—"social" implies the trustee with formal responsibilities may not be personally known to the trustor who attributes trust—as "the willingness to rely on those who have the responsibility for making decisions and taking actions". While these definitions assume the presence of risk, uncertainty, or vulnerability, they also imply that a trustor's beliefs, evaluations, or expectations of the trustee are antecedent to trust. That is, trust and

trustworthiness are distinct concepts, with trustworthiness being a quality of the trustee that the trustor evaluates or expects, while trusting is something that the trustor does subsequent to that evaluation (Liljeblad et al. 2009).

Research has refined conceptions and definitions of trust and trustworthiness (Levi and Stoker 2000, Colquitt et al. 2007). Organizational research notes that an organizations' ability to improve its trustworthiness can increase the trust of its constituents, and therefore is an important aspect of public relations (Sharp et al. 2013). Within the trust-as-attitude framework, trustworthiness connotes a characteristic of the trustee that causes perceptions of trust in the trustor (Li 2015, Hamm 2017). Trustworthiness, therefore, is based on judgements, evaluations, or inferences about the trustee's qualities or characteristics (morals, values, goals, or intentions; Cvetkovich and Winter 2003). Mayer et al. (1995) proposed 3 dimensions that comprise the trustworthiness of an organization. First, ability is the perception that a trustee has about the skills, competencies, and characteristics to influence a specific domain; for example, the trustor's belief that a wildlife agency has the capacity to effectively carry out an action that will provide a desired result for an individual. Second, benevolence is a trustor's belief that a trustee wants to do good to the trustor; for example, the agency wants to help and support the interests of their constituency. Third, integrity refers to a trustor's perception that a trustee is acting in accordance with a set of values or norms shared with or acceptable to the trustor; for instance, a perception that the agency adheres to a set of principles the trustor finds acceptable.

Understanding levels of trustworthiness among an affected public is important when wildlife agencies consider the implementation of new policies and subsequent levels of cooperation and compliance. For example, Winter et al. (1999) found that members of the public hold more positive attitudes toward increased national forest fees if the agency's trustworthiness was high. Similarly, Hamm (2017) found that trustworthiness played a key role in driving cooperation intention and behavior among hunters in the context of feral swine management. As trust is something a trustor does, irrespective of an ability to monitor or control the trustee, the act or declaration of support can be viewed as an action of trust. Therefore, antecedent perceptions of trustworthiness are important metrics for wildlife agencies to assess as the act of trust (support) occurs after an appraisal of trustworthiness (Mayer et al. 1995). In the context of our study, assessment of AGFC's trustworthiness as perceived by Arkansas waterfowl hunters can inform understanding of the level of support for novel GTR management.

STUDY AREA

Arkansas Game and Fish Commission manages 17 public land GTRs that provide waterfowl hunting access and opportunity (Figure 1). New GTR management plans that implement flood schedules to mimic natural flooding regimes were finalized in 2017 and implemented during the 2018–2019 waterfowl hunting season. Data were collected via an online survey from the target population of Arkansas resident waterfowl hunters ≥ 18 years old. In 2018, approximately 54,481 residents purchased a duck stamp; 41,604 provided email contact information (76.3% coverage) and, of those, 39,486 purchased both an Arkansas WMA permit and state waterfowl stamp, which served as our sample frame. To ensure $\geq 1,000$ responses and a margin of sampling error less than $\pm 3\%$ at a 95% confidence level, a probability sampling protocol was implemented to randomly select 5,000 emails. The initial invitation produced 225 undeliverable emails. In total 1,596 completed or partially completed responses were collected from 4,775 eligible emails, yielding a 33.4% response rate and $\pm 2.4\%$ margin of sampling error at a 95% confidence level (Dillman et al. 2014, AAPOR 2021).

METHODS

Data collection

Eligible respondents were initially contacted on 31 July 2019 via an email invitation to complete the questionnaire on the online survey platform Qualtrics (Qualtrics 2019). Social exchange communication principles and tailored

design protocol were followed (Dillman et al. 2014). Email reminders were sent every 4 days, potentially up to 6 times, until survey completion or an opt out notification was received. Data collection ended on 15 September 2019. No nonresponse check was implemented due to logistical constraints.

Variables

Salient value similarity was measured using 6 statements adopted from Vaske et al. (2007). Respondents read the question stem, "With respect to duck management in Arkansas (including WMAs and GTRs), please tell us how much you agree or disagree with the following statements": (1) AGFC shares my values, (2) I share AGFC's values, (3) AGFC supports my values, (4) I support AGFC's values, (5) AGFC shares my goals, and (6) I share AGFC's goals. Trustworthiness dimensions of ability and benevolence correspond with the framework proposed by Mayer et al. (1995) and were measured using statements adopted from Hamm (2017). Respondents read the question stem, "To what extent do you agree or disagree that the AGFC." Ability was measured with the 3 statements: (1) is generally competent, (2) can manage GTRs for ducks, and (3) has the knowledge necessary to manage GTRs for ducks. Benevolence was measured with the 3 statements: (1) cares about people like me, (2) is concerned about the effects its decisions have on people like me, and (3) cares about the concerns that are important to me. Support was measured using 3 statements: (1) I support how AGFC goes about managing for ducks, (2) I support how AGFC goes about managing WMAs for ducks, and (3) I support how AGFC goes about flooding GTRs for ducks. All items were measured on 7-point bipolar Likert-type response scale of strongly disagree (1) to strongly agree (7).

Analysis

A 2-step, covariance-based structural equation model (SEM) framework was applied to (1) evaluate the reliability and validity of measurement items and (2) test hypothesized structural relationships among latent factors (Anderson and Gerbing 1988). Analysis was conducted in Mplus (Muthén and Muthén 2017) and used listwise deletion procedures. First, confirmatory factor analysis (CFA) was used to test a measurement model and determine the extent to which questionnaire items reflect the expected latent factors. Second, a structural regression model was used to assess the extent the empirical data from respondents fit the hypothesized model via examination of structural paths from exogenous (independent) to endogenous (dependent) latent variables.

To assess reliability and validity, Cronbach's alpha (α) > 0.80 (Nunnally 1978), McDonald's omega (ω) > 0.80 (McDonald 1999), composite reliability (ρ_c) > 0.60 (Bagozzi and Yi 1988), average variance extracted (AVE) > 0.50 greater than the squared correlations between construct (Fornell and Larcker 1981, Malhotra 2010), and standardized factor loading > 0.50 (Hair et al. 2014) were considered adequate. To assess model-to-data fit, we follow recommendations by Hu and Bentler (1999), who suggest the combination of a standardized root mean square residual (SRMR) less than 0.08, root mean square error of approximation (RMSEA) less than 0.06, and comparative fit index (CFI) or Tucker-Lewis index (TLI) greater than 0.95 to indicate relatively good fit. Decisions at each step to assess psychometric adequacy followed recommendations from Kyle et al. (2020).

RESULTS

Mean age of respondents was 42 ± 13.7 years, and a majority were male (95.1%) and white (98.1%). Most respondents attained either a high school diploma (23.6%) or 4-year college degree (38.6%) and reported a pre-tax annual income of \$50,000–99,999 (36.8%) and \$100,000–149,999 (21.6%). Descriptive statistics illustrate the

TABLE 1 Mean (\bar{x}), standard deviation (SD), alpha (α), omega (ω), composite reliability (ρ_C) and average variance explained (AVE), standardized factor loading score (λ), standard error (SE), and Z-score (Z) of latent factor items in reference to the Arkansas Game and Fish Commission (AGFC) (all factor loadings significant, $p < 0.001$).

Latent factors and items	\bar{x}	SD	λ	SE	Z
Salient value similarity ($\alpha = 0.96$, $\omega = 0.96$, $\rho_C = 0.96$, AVE = 0.80)					
AGFC shares my values	4.8	1.6	0.92	0.01	49.63
I share AGFC's values	5.1	1.5	0.91	0.01	43.49
AGFC supports my values	4.8	1.6	0.93	0.01	70.28
I support AGFC's values	5.1	1.5	0.87	0.01	37.33
AGFC shares my goals	4.7	1.6	0.90	0.01	65.27
I share AGFC's goals	5.0	1.5	0.85	0.01	39.17
Ability ($\alpha = 0.90$, $\omega = 0.90$, $\rho_C = 0.90$, AVE = 0.76)					
AGFC is generally competent	4.8	1.7	0.82	0.01	38.08
AGFC can manage GTRs for ducks	4.5	1.8	0.90	0.01	35.88
AGFC has the knowledge necessary to manage GTRs for ducks	4.8	1.7	0.85	0.01	33.03
Benevolence ($\alpha = 0.92$, $\omega = 0.92$, $\rho_C = 0.92$, AVE = 0.80)					
AGFC cares about people like me	4.2	1.9	0.86	0.01	39.26
AGFC is concerned about the effects its decisions have on people like me	4.1	2.0	0.86	0.01	42.13
AGFC cares about the concerns that are important to me	4.3	1.9	0.92	0.01	51.68
Support ($\alpha = 0.91$, $\omega = 0.91$, $\rho_C = 0.92$, AVE = 0.79)					
I support how AGFC goes about managing for ducks	4.3	1.9	0.91	0.01	47.40
I support how AGFC goes about managing WMAs for ducks	4.2	1.9	0.92	0.01	60.35
I support how AGFC goes about flooding GTRs for ducks	4.3	1.9	0.80	0.02	40.57

Response scale: 1 (Strongly disagree), 2 (Disagree), 3 (Somewhat disagree), 4 (Neither disagree nor agree), 5 (Somewhat agree), 6 (Agree), 7 (Strongly agree)

Measurement model fit: $\chi^2 = 436.83$, $df = 84$; RMSEA = 0.08; CFI = 0.96; TLI = 0.95; SRMR = 0.03.

properties of latent factor scales (Table 1). Means for all items measuring SVS, ability, benevolence, and support ranged from 4.0–5.1. Respondents, on average, indicated they neither disagreed nor agreed to somewhat agreed that AGFC reflects their values or goals with respect to waterfowl management. Similar levels of agreement were observed for rating of AGFC's ability and benevolence, as well as respondents' support for AGFC's approach to waterfowl management. Listwise deletion procedures of the statistical software reduced sample size to $n = 587$. Overall, the measurement model indicates all items adequately reflect the latent factor ($\chi^2 = 436.83$, $df = 84$; RMSEA = 0.08; CFI = 0.96; TLI = 0.95; SRMR = 0.03). All latent factors hold adequate reliability with alpha and omega scores greater than 0.80 and composite reliability greater than 0.60, as well as adequate convergent and discriminant validity.

After establishing adequate measurement, we tested the hypothesized structural relationships among latent factors (Table 2). Structural model results indicate adequate model fit with the exception of RMSEA, which indicated less than reasonable fit ($\chi^2 = 536.96$, $df = 86$; RMSEA = 0.09; CFI = 0.95; TLI = 0.94; SRMR = 0.05). Perceived SVS significantly and positively predicted both ability and benevolence, lending support to H1 and H2. Ability and benevolence both significantly and positively predicted support, lending support to H3 and H4. The indirect effects of SVS on support via ability ($\beta = 0.48$, $SE = 0.057$, $P < 0.001$) and via benevolence ($\beta = 0.29$,

TABLE 2 Structural regression coefficients estimating the influence of salient value similarity (SVS), ability, and benevolence on support of waterfowl policy based on survey responses ($n = 587$) from licensed resident Arkansas, USA, waterfowl hunters ≥ 18 years old in 2018.

Dependent	Predictor	β	SE	Z	P	R ²
Ability	SVS	0.82	0.02	27.00	<0.001	0.67
Benevolence	SVS	0.82	0.02	37.78	<0.001	0.67
Support	Ability	0.59	0.05	11.14	<0.001	0.74
	Benevolence	0.35	0.05	6.24	<0.001	

Structural model fit: $\chi^2 = 536.96$, $df = 86$; CFI = 0.95; TLI = 0.94; RMSEA = 0.09; SRMR = 0.05.

SE = 0.055, $P < 0.001$) were also significant, lending support to H5 and H6. Salient value similarity explained 67% of the variance in ability and benevolence; ability and benevolence explained 74% of the variance in support for AFGC's waterfowl management.

DISCUSSION

We assessed the interrelationships among waterfowl hunters' perceived value similarity between themselves and the agency, their belief that the agency is trustworthy, and support for management policy. Salient value similarity and trustworthiness concepts were observed to have a positive and significant relationship. Trustworthiness dimensions of ability and benevolence—perceptions that the agency has the ability to adequately manage waterfowl and concerns itself with how its management effects hunters mediated the relationship between value similarity and policy support. Our findings reiterate the importance of value similarity and trustworthiness as theoretical concepts and highlights their importance as practical measures an agency can use to assess public perception and its relationship to policy support.

As our model hypothesized, SVS served as a significant antecedent along a chain of trust-related factors that lead to an outcome variable relevant to management and social feasibility. With ecological parameters and resource sustainability in mind, agencies are well-served to develop management policies and practices that are socially feasible or otherwise reflect the values of affected publics (Riley et al. 2002). People tend to rely more on individuals or institutions they believe follow certain principles, guidelines, or have certain goals (Cvetkovich and Winter 2003). As such, SVS is fundamental to the relationship between an agency and its constituencies. Not only do value similarities relate positively to trustworthiness, but they also have the added benefit of potentially reducing risk perceptions and increasing cooperation (Siegrist et al. 2000). In cases where ecological and sustainability considerations take precedent (as was the case with GTR management in Arkansas), elements of trustworthiness can mitigate or serve as a buffer against perceived value incongruency and policy support until users are able to see positive outcomes or benefits to the resource they value. Moreover, as perceptions of trust or trustworthiness are primarily active in the presence of risk, uncertainty, or vulnerability (Adams 2005), they are essential factors to consider during the proposition or implementation of new policy, particularly those that diverge from a well-established status quo (Bolsen et al. 2014).

Our study complements a research tradition that conceptualizes and operationalizes trust(worthiness) as the technical and moral competency of the trustee. A focus on trustworthiness differs from the traditions of dispositional trust (Smith et al. 2013), intention to trust (Vaske et al. 2007), or willingness to accept vulnerability (Hamm 2017), which focus on characteristics of the trustor. Operationally, an example of this distinction are survey questions that emphasize the individual as the subject (I believe or I think) versus those that emphasize an agency, organization, or institute as the subject (the agency or Arkansas Game and Fish Commission). The technical/moral

competency framework our conceptualization of trustworthiness draws on provides applied researchers with a complementary or alternative approach to collect data on the qualities or characteristics of the trustee (agency) rather than the trustor (hunter). In making focal the characteristics of the trustee rather than the trustor, impetus is placed on an agency to change its actions or public perception, which are presumably more in their control than the disposition or preferences of its users. The incorporation of trustworthiness provides a more comprehensive perspective on trust and differentiations between variables that cause trust, trust itself, and outcomes of trust.

Importantly, we emphasize that trustworthiness should not be interpreted as synonymous with confidence (Adams 2005, Earle and Siegrist 2008). Confidence is occasionally considered in tandem with trust (Rudolph and Riley 2014). But confidence relates to specific knowledge based on reason, fact, or past performance (logical, instrumental, calculative) whereas trustworthiness is more general and considers more than specific knowledge (emotional, affective, intuitive). Given our study context, there was no specific knowledge on AGFC's past performance to consider given the novelty of the referenced GTR policy, wherein an assumption of more than specific knowledge was warranted. That assumption is reflected both in our model with SVS antecedent and in the operationalization of ability and benevolence not referring to specific actions or past performance but being more general to the context of waterfowl and GTR management. Moreover, while similarity between trustworthiness and confidence may exist in judgements or perceptions of ability, that similarity disappears when applied to the dimensions of benevolence and integrity.

Though public trust in government is known to have declined (Pew Research Center 2021) and a level of distrust is expected within democratic governance (which includes public trust wildlife management), trustworthiness characteristics are ostensibly within an agency's control (Mayer et al. 1995, Levi and Stoker 2000). From the trust-as-attitude framework, institutions can actively work to increase trustworthiness evaluations made by affected publics (Li 2015, Hamm 2017). Just as trustworthiness is conceptually and operationally distinct from trust, constituents differentiate between trust and the qualities of an agency that make them believe they can rely on the agency, often with perceptions of trustworthiness preceding trust (Sharp et al. 2013, Smith et al. 2013). If perceived qualities of trustworthiness are not managed, they may eventually act as barriers to trusting (cooperative and supportive) relationships between affected publics and agencies (Bicchieri et al. 2011). For AGFC, the establishment or maintenance trustworthiness may be a more practical or tangible task compared to dispositional or rational trust (Barber 1983, Coleman and Stern 2018). Agencies may also consider it more effective, if empirical evidence suggest doing so will positively effect support, to focus on characteristics of their agency that contribute to trustworthiness rather than whether or not users intend to trust them, which is dictated by personal traits and the idiosyncrasies of individuals (Sharp et al. 2013).

Policy, engagement, and communications that instill belief among constituents that the agency shares their values, can manage the state's wildlife issues, and desires to do good are invaluable. The positive feedback loop wildlife agencies can create with value similarity and trustworthiness begins with investments in strategy and personnel that recognize the agency is a bulwark against risk and uncertainty. As that bulwark, an agency must publicly portray that image through associated actions. In terms of ability, an agency may do well to communicate or demonstrate beyond its technical and analytical abilities to include its ability to engage in policymaking and rule-setting processes that are seen as procedurally fair or constitutively just. Finally, it is worth restating that trust in an agency is a key predictor of public acceptability and support of management actions. Moreover, an agency's trustworthiness, as perceived by an affected public, is similarly predictive of acceptability and support, and antecedent to trust. While the concepts and metrics of trust and value similarity are established within the environmental social sciences and human dimensions literature, trustworthiness can be seen as a more pragmatic and attainable goal for wildlife agencies to achieve.

MANAGEMENT IMPLICATIONS

The establishment and maintenance of trust and trustworthiness is a continuous endeavor for wildlife agencies. Our results suggest a strong relationship between value similarity, trustworthiness, and support for wildlife policy. The management implication being that high levels of perceived value similarity and trustworthiness may afford

agencies a buffer against policies that would otherwise be less supported or viewed negatively given perceptions of uncertainty and risk can accompany change. We recommend that value similarity and trustworthiness be incorporated as evaluative metrics into agency programs. Value similarity and trustworthiness are pragmatic measures that point to actions or goals an agency can endeavor toward as both concepts reflect characteristics of the agency. By tracking general and situational-specific value similarity and trustworthiness metrics, managers gain additional knowledge of why an affected public may or may not support policy but also how changes in these interrelated concepts affects the others across locations, situations, and time.

ACKNOWLEDGMENTS

We thank all survey respondents for their participation. The authors are grateful to H. Hagy, L. Naylor, A. Gramza, and the Arkansas Game and Fish Commission for their contributions and in-kind support. Funding support was provided by U.S. Department of Agriculture, National Institute of Food and Agriculture, McIntire-Stennis Capacity Grant (ARK02509). We thank M. Ellis (Associate Editor), A. Knippes (Editorial Assistant), A. Tunstall (Copy Editor) and J. Levensgood (Content Editor) and 2 anonymous reviewers for constructive comments that improved our manuscript.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS STATEMENT

All procedures and materials were approved by the University of Arkansas at Monticello Institutional Review Board (No. FOR 002-F18).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in figshare at <https://doi.org/10.6084/m9.figshare.19179308.v1>.

ORCID

Kenneth E. Wallen  <https://orcid.org/0000-0002-7535-5805>

REFERENCES

- Adams, B. D. 2005. Trust versus confidence. Department of National Defence, Defence Research and Development Canada, Ontario, Canada.
- American Association for Public Opinion Research [AAPOR]. 2021. Transparency initiative disclosure elements. <<https://www.aapor.org/Standards-Ethics/AAPOR-Code-of-Ethics/Survey-Disclosure-Checklist.aspx>>. Accessed 4 Jan 2022.
- Anderson, J. C., and D. W. Gerbing. 1988. Structural equation modeling in practice: a review and recommended 2-step approach. *Psychological Bulletin* 103:411–23.
- Arkansas Game and Fish Commission [AGFC]. 2017. Greentree reservoir ecology and management. <<https://www.agfc.com/en/hunting/migratory-birds/waterfowl/gtr/>>. Accessed 1 Jun 2018.
- Arkansas Game and Fish Commission [AGFC]. 2018. Henry Gray Hurricane Lake WMA greentree reservoir public meeting. <<https://youtu.be/oV58EJEsHhs>>. Accessed 1 Nov 2018.
- Bagozzi, R. P., and Y. Yi. 1988. On the evaluation of structural equation models. *Journal of the Academy of Marketing Science* 16:74–94.
- Barber, B. 1983. *The logic and limits of trust*. Rutgers University Press, New Brunswick, New Jersey, USA.
- Bicchieri, C., E. Xiao, and R. Muldoon. 2011. Trustworthiness is a social norm, but trusting is not. *Politics, Philosophy & Economics* 10:170–187.
- Bolsen, T. J., N. Druckman, and F. L. Cook. 2014. How frames can undermine support for scientific adaptations: politicization and the status-quo bias. *Public Opinion Quarterly* 78:1–26.
- Broadfoot, W. M. 1967. Shallow-water impoundment increases soil moisture and growth of hardwoods. *Soil Science Society of America Journal* 314:562–564.

- Coleman, K., and M. J. Stern. 2018. Exploring the functions of different forms of trust in collaborative natural resource management. *Society & Natural Resources* 311:21–38.
- Colquitt, J. A., B. A. Scott, and J. A. LePine. 2007. Trust, trustworthiness, and trust propensity: a meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology* 924:909–927.
- Cvetkovich, G. T., M. Siegrist, R. Murray, and S. Traggesser. 2002. New information and social trust: Asymmetry and perseverance of attributions about hazard managers. *Risk Analysis* 222:359–367.
- Cvetkovich, G., and P. L. Winter. 2003. Trust and social representations of the management of threatened and endangered species. *Environment and Behavior* 35:286–307.
- Dillman, D. A., J. D. Smyth, and L. M. Christian. 2014. Internet, phone, and mixed mode surveys: the tailored design method. Fourth edition. John Wiley and Sons, Hoboken, New Jersey, USA.
- Earle, T. C. 2004. Thinking aloud about trust: a protocol analysis of trust in risk management. *Risk Analysis* 24:169–183.
- Earle, T. C., and G. Cvetkovich. 1995. Social trust: toward a cosmopolitan society. Praeger, Westport, Connecticut, USA.
- Earle, T., and M. Siegrist. 2008. Trust, confidence and cooperation model: a framework for understanding the relation between trust and risk perception. *International Journal of Global Environmental* 8:17–29.
- Fornell, C., and D. F. Larcker. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18:39–50.
- Hair, J. F., W. C. Black, B. J. Babin, and R. E. Anderson. 2014. *Multivariate data analysis*. Pearson, Harlow, Essex, United Kingdom.
- Hamm, J. A. 2017. Trust, trustworthiness, and motivation in the natural resource management context. *Society & Natural Resources* 308:919–933.
- Hu, L. T., and P. M. Bentler. 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling* 61:1–55.
- Keeland, B. D., R. O. Draugelis–Dale, and J. W. McCoy. 2010. Tree growth and mortality during 20 years of managing a green-tree reservoir in Arkansas, USA. *Wetlands* 30:405–416.
- King, S. L., J. A. Allen, and J. W. McCoy. 1998. Long-term effects of a lock and dam and greentree reservoir management on a bottomland hardwood forest. *Forest Ecology and Management* 1123:213–226.
- Kyle, G. T., A. C. Landon, J. J. Vaske, and K. E. Wallen. 2020. Tools for assessing the psychometric adequacy of latent variables in conservation research. *Conservation Biology* 34:1353–1363.
- Levi, M., and L. Stoker. 2000. Political trust and trustworthiness. *Annual Review of Political Science* 3:475–507.
- Li, P. P. 2015. Trust as a leap of hope for transaction value: a 2-way street above and beyond trust propensity and expected trustworthiness. Pages 37–53 in B. Bornstein and A. Tomkins, editors. Springer, New York, New York, USA.
- Liljeblad, A., W. T. Borrie, and A. E. Watson. 2009. Determinants of trust for public lands: fire and fuels management on the Bitterroot National Forest. *Environmental Management* 43:571–584.
- Malhotra, N. K. 2010. *Marketing research: an applied orientation*. Sixth edition. Prentice Hall, Upper Saddle River, New Jersey, USA.
- Mayer, R. C., J. H. Davis, and F. D. Schoorman. 1995. An integrative model of organizational trust. *Academy of Management Review* 203:709–734.
- McDonald, R. P. 1999. *Test theory: A unified treatment*. Routledge, New York, New York, USA.
- Muthén, L. K., and B. O. Muthén. 2017. *Mplus user's guide*. Eighth edition. Muthén and Muthén, Los Angeles, California, USA.
- Needham, M. D., and J. J. Vaske. 2008. Hunter perceptions of similarity and trust in wildlife agencies and personal risk associated with chronic wasting disease. *Society & Natural Resources* 21:197–214.
- Newling, C. J. 1982. Ecological investigation of a greentree reservoir in the Delta National Forest, Mississippi. U.S. Army Corp of Engineers, Washington, D.C., USA.
- Nunnally, J. C. 1978. *Psychometric theory*. McGraw-Hill, New York, New York, USA.
- Pew Research Center. 2021. Public trust in government: 1958–2021. <<https://www.pewresearch.org/politics/2021/05/17/public-trust-in-government-1958-2021/>>. Accessed 19 Apr 2022.
- Qualtrics. 2019. *Qualtrics*. Provo, Utah, USA.
- Raftovich, R. V., S. C. Chandler, and K. K. Fleming. 2018. Migratory bird hunting activity and harvest during the 2016–17 and 2017–18 hunting seasons. U.S. Fish and Wildlife Service Laurel, Maryland, USA.
- Riley, S. J., D. J. Decker, L. H. Carpenter, J. F. Organ, W. F. Siemer, G. F. Mattfeld, and G. Parsons. 2002. The essence of wildlife management. *Wildlife Society Bulletin* 30:585–593.
- Riley, S. J., J. K. Ford, H. A. Triezenberg, and P. E. Lederle. 2018. Stakeholder trust in a state wildlife agency. *Journal of Wildlife Management* 82:1528–35.
- Rokeach, M. 1973. *The nature of human values*. Free Press, New York, New York, USA.
- Rousseau, D. M., S. B. Sitkin, R. S. Burt, and C. Camerer. 1998. Not so different after all: a cross-discipline view of trust. *Academy of Management Review* 23:393–404.

- Rudolph, B. A., and S. J. Riley. 2014. Factors affecting hunters' trust and cooperation. *Human Dimensions of Wildlife* 19: 469–479.
- Schwartz, S. H. 1992. Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology* 25:1–65.
- Sharp, E. A., R. Thwaites, A. Curtis, and J. Millar. 2013. Trust and trustworthiness: conceptual distinctions and their implications for natural resources management. *Journal of Environmental Planning and Management* 56: 1246–1265.
- Siegrist, M., G. Cvetkovich, and C. Roth. 2000. Salient value similarity, social trust, and risk/benefit perception. *Risk Analysis* 20:353–362.
- Slovic, P. 1993. Perceived risk, trust, and democracy. *Risk Analysis* 13:675–682.
- Smith, J. W., J. E. Leahy, D. H. Anderson, and M. A. Davenport. 2013. Community/agency trust and public involvement in resource planning. *Society & Natural Resources* 26:452–471.
- Sponarski, C. C., J. J. Vaske, A. J. Bath, and M. M. Musiani. 2014. Salient values, social trust, and attitudes toward wolf management in south–western Alberta, Canada. *Environmental Conservation* 41:303–310.
- Vaske, J. J., J. D. Absher, and A. D. Bright. 2007. Salient value similarity, social trust and attitudes toward wildland fire management strategies. *Human Ecology Review* 14:223–232.
- Vaske, J. J., M. D. Needham, and C. A. Miller. 2021. Wildlife agency trust and perceived risks from chronic wasting disease. *Wildlife Society Bulletin* 45:597–607.
- Wallen, K. E., and A. C. Landon. 2021. Systematic map of conservation psychology. *Conservation Biology* 34:1339–1352.
- White, M. P., S. Pahl, M. Buehner, and A. Haye. 2003. Trust in risky messages: the role of prior attitudes. *Risk Analysis* 23: 717–726.
- Wigley, T. B., and T. H. Filer, Jr. 1989. Characteristics of greentree reservoirs: A survey of managers. *Wildlife Society Bulletin* 17:136–142.
- Winter, P. L., L. J. Palucki, and R. L. Burkhardt. 1999. Anticipated responses to a fee program: The key is trust. *Journal of Leisure Research* 31:207–226.
- Young, G. L., B. L. Karr, B. D. Leopold, and J. D. Hodges. 1995. Effect of greentree reservoir management on Mississippi bottomland hardwoods. *Wildlife Society Bulletin* 23:525–531.

Associate Editor: M. Ellis.

How to cite this article: Spears, J. G., K. E. Wallen, and D. C. Osborne. 2022. Value similarity and trustworthiness predict support for waterfowl management policy. *Wildlife Society Bulletin* e1375. <https://doi.org/10.1002/wsb.1375>