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Extension's Role in Developing Opinion Leaders to Drive Water Conservation

Abstract

With concern over the future of water availability in Florida increasing, Extension professionals targeting water conservation behaviors must use the most effective approaches possible. Florida population survey data obtained by the Center for Public Issues Education at the University of Florida's Institute of Food and Agricultural Sciences demonstrated that both willingness to engage in water conservation behaviors and voting behavior serve as predictors of opinion leadership. Extension professionals may be able to maximize the impact of water conservation initiatives by focusing on these indirect variables in developing relevant opinion leaders.

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Introduction

Although agricultural usage of water is on the decline from historic highs, public water usage continues to increase (Florida Department of Environmental Protection, 2010). Research conducted in the southern United States has demonstrated that among southerners, Floridians have particular concern about the future of water availability in their state. They are among the most likely to think that water resources will not meet the population needs 10 years from now and to perceive that a prolonged drought will occur (Borisova et al., 2013). Urban development and population growth in Florida are linked with increased water usage. It has been predicted that by 2025 water usage will have increased by 2 billion gal from 2005 usage (Florida Department of Environmental Protection, 2007). Excessive water use not only depletes natural freshwater reserves but also increases the risks of saltwater intrusion into potable water sources and sinkhole formation across the state (Odera, Lamm, Dukes, Irani, & Carter, 2013).

With public water consumption ranking highest among sectors of water usage in Florida, Extension professionals can have the greatest impact on water conservation by targeting the everyday behaviors of state residents. Unlike agricultural water usage, an area for which Extension professionals can target a few key individuals in large operations to achieve substantial effects, public water consumption involves a larger number of individuals. Consequently, there is great benefit in Extension professionals' developing constituents within social systems who will have influence over other members of those systems (Rogers, 2003). Extension can then involve these opinion leaders in encouraging the spread of particular water conservation behaviors.

Since the 1940s, the idea of diffusion of innovations has served as a model for Extension professionals for conceptualizing the way in which novel technologies or behaviors spread through populations (Stephenson, 2003). When looking at how novel behaviors spread through populations, members can be described as falling into five categories that exhibit a normal distribution. The innovators are rapid to adopt new behaviors and have the highest level of contact with scientific information sources. The early adopters take on new behaviors next and represent the highest level of contact with local change agents, including Extension professionals. The early majority follows, embracing new ideas only after some of their peers have done so. The late majority requires overwhelming pressure from their peers to adopt new ideas. Finally, the laggards, with their focus on tradition and the past, are the last to adopt new ideas. As willingness to adopt changes decreases across these categories, socioeconomic status decreases as well (Rogers, 1963).

Levels of opinion leadership vary across these groups, with the early adopters having the largest number of opinion leaders and the innovators and early majority including some opinion leaders (Rogers, 1963). Opinion leadership has been linked with level of cooperation with Extension professionals (Schock & Matthews, 1974). As a result, Extension professionals benefit from applying this model of information diffusion to target subpopulations most likely to spread a desired innovation, thereby maximizing the impact of the targeted behavior change.

Cultivating community engagement—particularly among the younger generation—has been identified as a key component in developing rural communities (Ricketts & Place, 2009). Understanding the relationship between community engagement and opinion leadership is useful for Extension professionals, not only for developing resource conservation behaviors in an identified community but also for identifying avenues for community leadership development. Similarly, ensuring that individuals are engaged and informed voters through leadership development programming and provision of information about water resource conservation is a role Extension can play. Research has shown that individuals who vote are more likely to respond to prosocial messages, particularly regarding water conservation during a drought (Bolsen, Ferraro, & Miranda, 2014).

Although research has demonstrated connections between opinion leadership and civic engagement (Shah & Scheufele, 2006) and opinion leadership and voting behavior (O'Cass & Pecotich, 2005), such connections in relation to water conservation behavior have not been explored. These relationships may prove useful for promoting desired water conservation behaviors in a manner that is efficient and cost effective for Extension professionals and simultaneously maximizes impact.

Purpose and Objectives

The purpose of the study reported here was to understand how an individual's community engagement and voting behavior relate to his or her level of opinion leadership in relation to water conservation behaviors. To investigate this relationship, we identified the following two key objectives:

1. Describe respondents' current levels of opinion leadership, community engagement, and voting behavior in relation to water conservation.

2. Determine the levels at which community engagement and voting behavior predict opinion leadership on water issues.

Methods

In December 2014, we conducted a web-based water perception survey to achieve our objectives. The adapted survey instrument was reviewed and verified for validity by a panel of experts, including the director of the University of Florida (UF)/Institute of Food and Agricultural Sciences (IFAS) Center for Public Issues Education for Agriculture and Natural Resources, the director of the UF Water Institute, the director of the UF/IFAS Center for Landscape Conservation and Ecology, and an Extension evaluation specialist specializing in survey design. Institutional review board approval was then obtained from the University of Florida.

We received 749 responses from the 1,192 surveys we distributed, for a response rate of 63%. The target audience comprised Florida residents who were over the age of 18 and representative of the population of the state. To ensure that the results were representative of Florida residents, we subsequently weighted the results according to 2010 U.S. Census data (Baker et al., 2013), using post stratification methods (Kalton & Flores-Cervantes, 2003).

The variables of interest for the study included opinion leadership on water issues, willingness to engage in community behaviors associated with water conservation, and reported voting behavior. We collected data relating to opinion leadership on water issues by using a 5-point semantic differential scale based on Childers' (1986) Opinion Leadership instrument. We gathered voting behavior data by using a 5-point Likert scale for identifying level of agreement, and we gathered community engagement data by using a 5-point Likert scale for identifying likelihood of engagement that was based on the 2012 RBC Canadian Water Attitudes Study (Patterson, 2012). Respondents were allowed to indicate "not applicable" where appropriate. We used imputation for missing data and calculated indexes for the variables of interest by averaging the items within the construct of interest. We calculated Cronbach's alpha ex post facto to ensure reliability, and the indexes were found to be reliable. Finally, we conducted regression analysis to determine the extent to which community engagement and voting behavior predicted opinion leadership. Rotation of the index variables was used for ensuring normality of the distributions prior to analysis. Data were processed through use of both the R programming language in R Studio (version 0.98.1091) and SPSS statistical software.

Results

The mean age of respondents was 49, with respondents ranging in age from 18 to 91 years old. The majority of respondents, 63.8%, were female. Regarding the racial/ethnic makeup of the sample, 89.6% of respondents identified themselves as White, 8.5% as Hispanic, 7.9% as Black, 1.2% as Native American, and 2.7% as multiracial.

The majority of responses indicated low to neutral levels of opinion leadership on water conservation issues (Table 1).

Table 1.

Opinion Leadership on Water Issues (*N* = 749)

Item	1[a] %	2 %	3 %	4 %	5[a] %
During the past six months, how many people have you told about water issues affecting Florida agriculture and natural resources	59.0	18.2	11.1	6.4	5.3

sectors? 1 - Told no one to 5 - Told a number of people					
In general, do you talk to your friends and colleagues about water issues 1 - Never to 5 - Very Often	34.7	30.8	21.5	8.7	4.3
Compared with your circle of friends, how likely are you to be asked about new information relating to water issues? 1 - Not at all likely to be asked to 5 - Very likely to be asked	32.2	19.0	30.0	12.6	6.3
Overall, in all your discussions with friends and colleagues regarding issues surrounding water, are you 1 - Not used as a source of advice to 5 - Often used as a source of advice	29.0	15.9	34.2	14.4	6.5
When you talk to your friends and colleagues about water issues, do you 1 - Give very little information to 5 - Give a great deal of information	22.0	15.5	38.5	17.6	6.4
In a discussion about water issues, which of the following happens most? 1 - Your friends tell you about issues, including new developments to 5 - You tell your friends about issues, including new developments	15.4	12.3	52.1	13.1	7.2

[a]A bipolar semantic differential scale was used; each question had a different prompt, but for each question, 1 was a negative response and 5 was a positive response.

The greatest amount of variability in participants' responses related to water conservation community engagement variables (Table 2). Activities that were more passive, including supporting an organization or voting, ranked among the most popular, whereas activities involving physical presence (e.g., visiting natural water bodies, volunteering, joining organizations) and, in particular, monetary expense were the least popular.

Table 2.

Community Engagement Associated with Water Issues (*N* = 749)

Item	Very unlikely %	Unlikely %	Undecided %	Likely %	Very likely %
Support water restrictions issued by my local government	2.9	3.2	18.8	31.8	42.3
Vote to support water conservation programs	2.1	1.9	16.4	37.7	39.1
Vote for candidates who support water conservation	2.5	1.6	24.8	35.6	32.3
Visit springs, lakes, state parks, etc. to learn about water issues	7.6	14.2	27.5	27.6	21.5
Volunteer for a stream cleanup or wetland	16.6	20.8	30.6	18.7	10.5

restoration event					
Donate to an organization that protects water	13.6	14.3	35.6	24.3	8.8
Join a water conservation organization	15.6	24.8	33.8	17.1	6.4
Buy a specialty license plate that supports water protection efforts	24.8	27.4	20.6	17.8	6.0

Note. Row totals yield less than 100% because of some participants' selecting a "not applicable" response.

Reported voting behavior elicited an almost consistent response pattern, with each prompt yielding high levels of agreement (Table 3). Prompts with the lowest rates of agreement related to discussing voting opinions with other people, though a large majority of respondents did rate those prompts highly.

Table 3.

Voting Behavior Associated with Agriculture and Natural Resources (ANR) Issues (*N* = 749)

Item	Strongly disagree %	Disagree %	Neither agree nor disagree %	Agree %	Strongly agree %
When preparing to vote on ANR issues . . .					
I would consider both the positive and negative implications that could result	0.1	0.9	6.0	58.9	34.0
I would seek to fully understand the policy	0.1	0.7	8.5	57.4	33.1
I would seek factual information from multiple sources	0.3	0.7	11.9	57.5	29.6
I would ask others what their opinions are	1.3	4.3	21.6	48.5	24.3
I would discuss my opinion with others	0.8	4.9	23.9	47.5	22.8

Voting behavior exhibited the highest mean, with the lowest standard deviation, followed by willingness to act in community engagement (Table 4). We used Pearson's *r* to examine voting behavior and community engagement for multicollinearity issues. Voting behavior and willingness to act in community engagement were found to have only a low-level correlation (0.35) according to Davis's (1971) convention. Both indexes were found to be significant in relation to explaining the variance within opinion leadership (Table 5), with voting behavior exhibiting the lowest mean but the highest standard deviation (Table 4). We calculated a mean score, and skewness and kurtosis were examined and were found to be within acceptable ranges.

Table 4.

Regression of Community Engagement and Voting Behavior on Opinion Leadership on Water Issues Using a Power Model

Transformation (N = 749)

Index	*M*	*SD*	α
Voting behavior	4.12	0.56	0.86
Willingness to act in community engagement[a]	3.38	0.76	0.83
Voting behavior index	2.48	0.96	0.88

[a]Imputation based on median was used for missing data.

Table 5.

Regression of Community Engagement and Voting Behavior on Opinion Leadership on Water Issues Using a Power Model Transformation (N = 749)

Index	*b*	*p*
Willingness to act in community engagement index	0.53	.00**
Voting behavior index	0.38	.00**

Note. Adjusted R^2 = 0.31. **p < .01

Discussion

Most notably, the results showed that 31% of the variance in an individual's opinion leadership can be predicted through his or her community engagement and voting behavior. This finding suggests that influencing community engagement and voting behavior can have a strong positive effect on developing opinion leadership around an issue. Opinion leaders promote the spread of novel behaviors and technologies through communities (Rogers, 2003). Because of the strong correlation among the characteristics of opinion leadership, willingness to engage in community behaviors associated with water conservation, and voting behavior, Extension professionals should be able to advance water conservation campaigns by identifying and developing community engagement and voting behavior within populations.

Extension professionals may best promote opinion leadership related to water conservation by developing outreach campaigns centered on becoming engaged with community activities, such as by visiting a natural water site or becoming knowledgeable about local water policy. Engagement activities that may require particular emphasis are those that involve donation or physical presence, such as cleaning up a park or joining a water conservation organization. Similarly, Extension professionals should promote informed voting practices. Opinion leadership could therefore be advanced among engaged populations, increasing the success of Extension professionals in increasing water conservation behavior.

Furthermore, Extension professionals can explore existing community engagement and voting behavior within populations to identify individuals who are likely opinion leaders. Individuals who openly display informed community engagement or voting behavior indicators, especially in the least likely areas (physical presence, donation), are key population figures for disseminating desired water conservation recommendations and

knowledge throughout target communities.

Further research is necessary for establishing methods Extension professionals can use to accurately identify those who are engaged in communities and exhibit informed voting behavior so that such individuals can be deployed as opinion leaders. Additionally, future research may focus on methods for encouraging positive community engagement and voting behavior in order to better develop opinion leadership within local communities. Demographic patterns around these traits may be investigated to determine potential populations of interest.

With an understanding of how opinion leadership, willingness to engage in water conservation behaviors, and voting behavior are intrinsically connected, Extension professionals can focus their outreach programs on community engagement and informed voting practices and, in doing so, develop and identify the opinion leaders who will drive water conservation behaviors within the greater population. Considering the prevalence of both time constraints and limited resource availability relative to Extension work, Extension professionals may be able to better serve their communities and preserve limited natural resources by applying the findings reported in this article.

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