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Research Paper

Informing water-saving communication in the United States using the situational theory of problem solving

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ABSTRACT

Environmental communication professionals have been conducting water conservation programs across the nation, recognizing the need to conserve water as one of the top issues facing the United States (U.S.). Research has shown the number of people that will be exposed to water scarcity will steadily increase. This research uses the Situational Theory of Problem Solving in an attempt to further understand why and how landscape irrigators (residents that control their home landscape irrigation systems) across the U.S. recognize water as an issue and choose to communicate about water conservation. The findings revealed landscape irrigators recognize water use as an issue but exhibit a low level of communicative action when addressing the issue. In addition, as their perceived level of involvement increases, they are less likely to communicate about water conservation, revealing a sense of cognitive dissonance and discomfort with their behavior to the point they would rather not discuss the problem. Recommendations include encouraging environmental communication professionals to communicate at the community level to discuss community conservation effects, utilize existing clientele to develop a sense of involvement among their circles of influence and encourage the use of social media techniques when communicating to further their reach.

1. Introduction

Water is critical to society as so much of daily human life is fully dependent upon its availability. According to the United National World Water Assessment Programme (2016) “1.35 billion jobs (42% of the world’s total active workforce) are likely to be heavily water dependent” (p. 37). Seventy-nine percent of residents in major cities across the United States (U.S.) indicated they had irrigated their lawn over the previous year (Polsky et al., 2014). The U.S. consumes 2842 cubic meters per capita per year of water. The amount of water consumed by the U.S. is consider extensive and is the third largest water consumption footprint among countries around the world with populations larger than five million (Hoekstra & Mekonnen, 2012). From 2014 to 2060, the U.S. population is projected to increase from 319 million to 417 million residents (Colby & Ortman, 2014). Gosling and Arnell (2016) found the number of people exposed to water scarcity as a result of population growth by 2020 will be 58 million in the U.S. alone.

With an increasing dependence on water, increased scarcity and population growth, water utilization for recreational-landscape irrigation must be monitored and reduced. In several parts of the U. S., where lush landscapes are sought year-round, the amount of water used in landscapes is much higher than that used for domestic or commercial purposes. For example, landscape irrigation for California’s homes and businesses accounted for 50% or more of the total water used (Mayer et al., 2009). Similarly, landscape irrigation using a programmed sprinkler in Florida has been found to account for just more than half (50.8%) of a household’s water consumption (Endter-Wada, Kurtzman, Keenan, Kjelgren, & Neale, 2008). In some places, such as Scottsdale, Arizona and Denver, Colorado, analyses of irrigation practices have revealed outdoor water use accounting for more than 60% of a household’s water consumption (DeOreo, Mayer, Dziegielewski, & Kiefer, 2016). Not only are these large amounts, but may reflect more water being used than the plants require for maintenance (Endter-Wada et al., 2008; Glenn, Endter-Wada, Kjelgren, & Neale, 2015; Kjelgren, Rupp, & Kilgren, 2000).

There are a number of influences that cause U. S. residents to

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consume large amounts of water for their home landscapes. Polsky et al. (2014) found that out of six major cities in the U. S., those with higher socioeconomic statuses in the drier cities of Phoenix and Los Angeles were more likely to consume larger amounts of water to irrigate their home landscapes. In the city of Phoenix, Arizona cultural and social norms were the leader in influencing homeowners to maintain their lawns to believed standards (Larson & Brumand, 2014). However, in the Minneapolis metropolitan area of Minnesota there are irrigation restriction rules in every city code analyzed in a thirteen-county area (Sisser et al., 2016). The water restrictions in the metropolitan area of Minneapolis included either restricting outdoor use of water (dependent upon season) or restricting based on stated water shortages (Sisser et al., 2016).

Water withdrawals for recreational-landscape irrigation in Florida has been increasing since 2005 (Marella, 2008, 2014). Individuals who have in-ground irrigation systems use outside landscaping companies to manage their lawns, have a higher than average annual household income, and are not readily engaged in water conservation have been studied extensively (Huang, Lamm, & Dukes, 2016). These individuals, referred to as landscape irrigators, are a prime target population for environmental communication professionals trying to reduce water consumption because they have the ability to reduce water use in a way that still allows for a healthy lifestyle.

Landscape irrigators have been found to schedule their irrigations systems outside of best management practices developed by land grant universities, preferring to set their irrigation systems and then forget about them (Huang et al., 2016). Warner, Lamm, Rumble, Martin, and Cantrell (2016) analyzed landscape irrigators by clustering them based on specific behavioral or perceived notions and found the majority were “water considerate”, meaning they are somewhat engaged in conservation practices but are not active water conservers and have room to improve. In addition, Warner et al. (2016) found 19% of landscape irrigators were unconcerned about their water use and are unlikely to modify practices to conserve water in their landscape.

Researchers have noted that outreach professionals “must begin to use approaches that go beyond knowledge transfer and deliberately motivate behavior change” (Monaghan, Ott, Wilber, Gouldthorpe, & Racevskis, 2013, p. 3) especially when it comes to communicating about water use. One approach is to present water conservation as a problem and examine how people then communicate about the problem to determine their motivations (Grunig, 1997). By understanding motivation and its connection to increasing communication, environmental communication professionals can begin to change how people think about water as a problem. Motivation to change can lead to adequate communication about that change to create a resounding effect despite the inability to predict water use.

1.1. Theoretical framework

The situational theory of problem solving (STOPS) and its theoretical predecessor, the theory of publics, are both rooted in the writings of John Dewey who wrote about human thought and inquiry as a process pursuant to solving a problem (Dewey, 1910). James Grunig first introduced the theory of publics in 1966 to explain how individuals communicate and make decisions. The theory evolved to offer an explanation for the identification of publics within organizations (Grunig, 1997) and has been used to identify and understand publics, including being used to explain and predict public opinion (Grunig, 2003).

The theory of publics employs three variables to explain and predict individual communication behavior: problem recognition, level of involvement, and constraint recognition (Kim & Grunig, 2011). The theory of publics also has two dependent variables that distinguish active and passive communication behavior in how individuals acquire information: information seeking and processing. Researchers have used the theory of publics to predict which publics are more likely to communicate actively about various issues (Aldoory & Sha, 2006). The key implication for environmental communication professionals is the ability to avoid targeting costly communication messages to inactive or less active publics who are unlikely to attend to these messages (Grunig, 1989; Grunig & Hunt, 1984). Communication researchers have used the theory of publics to examine landscape irrigators based on their problem recognition that plentiful water is important, their level of involvement in water conservation behaviors, and their constraint recognition related to homeowner’s association membership and association requirements to abide by water restrictions (Lamm, Lundy, Warner, & Lamm, 2016).

STOPS expands upon the dependent variables related to information acquisition in the theory of publics and adds dependent variables for information selection and information transmission (Kim & Grunig, 2011). According to Kim and Grunig, “people selectively invest their communicative and cognitive resources in a problem only when they perceive the effort to be necessary and relevant” (Kim & Grunig, 2011, p. 122). STOPS extends the communicative behaviors involved in problem solving, underscoring that when people seek and find helpful information they tend to share that information with others faced with the same problem (Kim & Grunig, 2011). While STOPS has been used in a number of behavior change communications contexts, it has not been applied to strategies to encourage landscape water conservation behaviors.

Grunig (1997) defined problem recognition as occurring when “people detect that something should be done about a situation and stop to think about what to do” (Grunig, 1997, p. 10). Warner et al. (2016) discovered that those people who were most involved in home landscape practices were also the ones who assigned the highest level of importance to water issues. Lim, Greenwood, and Jiang (2015) reported that problem recognition surrounding watershed protection was a key factor explaining students’ information seeking and sharing about the issue.

Involvement recognition refers to an individual’s perception that he/she is connected with a problem. Higher levels of perceived involvement are typically associated with more active information seeking (Grunig, 1976). While personal involvement comes from the field of psychology, constraint recognition comes from economics and management science (Kim & Grunig, 2011). Constraint recognition occurs when “people perceive that there are obstacles in a situation that limit their ability to do anything about the situation” (Grunig, 1997, p. 10). A lack of perceived constraints, often referred to as self-efficacy or perceived behavioral control, has been positively related to environmental behaviors such as conserving water (Trumbo & O’Keefe, 2005). Referent criterion are previous experiences and/or knowledge that influence how individuals approach problem solving (Kim & Grunig, 2011). Burch (2014) found that problem recognition, involvement recognition, and constraint recognition explained nearly half of the variance in situational motivation surrounding climate change in a study on communication among undergraduates. Involvement recognition was the only significant and unique contributor of these variables (Burch, 2014).

These independent variables produce varying levels of situational motivation in problem solving. The level of motivation leads individuals to various communicative actions in the problem-solving process. These actions have been categorized as acquisition, selection, and transmission (Kim & Grunig, 2011). The general postulate of STOPS is that “the more one commits to problem resolution, the more one becomes acquisitive of information pertaining to the problem, selective in dealing with the information, and transmissive in giving it to others” (Kim & Grunig, 2011, p. 125).

The STOPS model includes an active and a passive communication behavior for each of the following categories: information acquisition (seeking and attending), information selection (forefending and permitting), and information transmission (forwarding and sharing) (Kim & Grunig, 2011). Active and passive communication behaviors were difficult to distinguish in this study; therefore, information acquisition,