Research Paper

Community attachment, beliefs and residents' civic engagement in stormwater management

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Highlights

- A conceptual model of community attachment, beliefs and civic engagement is proposed and tested.
- Neighborhood social attachment is an important predictor of residents civic engagement in water.
- Engagement strategies that appeal to resident attachment and beliefs are likely to be successful.

Abstract

This study examines the drivers of civic engagement in water resource planning and management in diverse watersheds in the Minneapolis-St. Paul (Twin Cities) metropolitan area. Specifically, it investigates the direct and indirect influence of community attachment on perceived collective efficacy and environmental concern, and on civic engagement. Data were collected through a self-administered mail survey of 1000 residents from selected census tracts within three watersheds. Data were analyzed using structural equation modeling. Findings suggest that residents' attachment to their neighborhood through social ties and ties to the natural environment drives their engagement in water resource protection. Residents who are attached to their neighborhood through social ties are likely to be civically engaged in water resource protection. Further, residents' perceived collective efficacy and their concern about stormwater are significant predictors of civic engagement in water. This study offers strategies for resource professionals and other local actors to best design programs aimed at increasing resident engagement in water resource conservation.

Introduction

Despite advances in biophysical science and technology, stormwater management continues to be a major challenge for urban planners, water managers, residents and business owners. For example, an estimated 40–60% of the lakes and 60–100% of streams and rivers in the Minneapolis-St. Paul (Twin Cities) metropolitan area are considered unsuitable for (i.e., do not fully support) swimming or recreation (Minnesota Pollution Control Agency, 2015). Many of the pollutants plaguing the Twin Cities' surface water, including nutrients, fecal coliform, chloride, and polychlorinated biphenyl (Capitol Region Watershed District (CRWD), 2010; Mississippi Watershed Management Organization (MWMO), 2016; Ramsey-Washington Metro Watershed District (RWMWD), 2017), are delivered to water bodies via stormwater runoff. Stormwater management, a

2017), are delivered to water bodies via stormwater runoff. Stormwater management, a central concern to water managers in the Twin Cities, will require not only technical solutions such as improved stormwater infrastructure, but also the commitment and action of diverse stakeholders. Private-sphere (e.g., adoption of rain gardens) and public-sphere (e.g., civic engagement in water resource planning) pro-environmental behaviors (Stern, 2000) are needed.

Urban community members should be considered key stakeholders in stormwater management not only because they are primary plan implementers (Morton & Brown, 2011) and beneficiaries, but also because they tend to bear many of the plan's associated costs. Community members also offer local knowledge about social and ecological conditions (Sabatier et al., 2005). Resolution of collective problems such as water pollution requires the commitment and actions of citizens. Without adequate levels of public participation, water resource programs may fail to attract participants and meet people's needs (Prokopy and Floress, 2005).

Water resource programs that engage community members in planning and decision making have multiple benefits. They increase social capital (Prokopy & Floress, 2011), build trust and perceived legitimacy of planning processes (Trachtenberg & Focht, 2005), build support for funding and regulations (Larson & Lach, 2008) and improve plan implementation (Lubell et al., 2005). While direct evidence linking increased levels of civic engagement to water quality improvements is scarce, a recent study linked collaborative watershed management to progress on total maximum daily load implementation in Ohio and West Virginia (Hoornbeek, Hansen, Ringquist, & Carlson, 2013). A study of Portland's Community Watershed Stewardship Program demonstrates that collaborative approaches that engage citizens in the planning process have the potential to increase citizen trust and improve the biophysical environment (i.e., improving riparian areas) (Shandas and Messer, 2008).

While the benefits of citizen engagement in water resource programming are clear, getting and keeping such engagement is often challenging. Studies on citizen-based watershed groups demonstrate the difficulty in sustaining member involvement and interest (e.g., Floress, Mangun, Davenport, & Williard, 2009; Koehler & Koontz, 2008). To be effective, civic engagement policies and programs must be based on an understanding of the drivers of and constraints to civic engagement in water resource planning and management. This paper examines the drivers of civic engagement in water resource planning and management in diverse watersheds in the Twin Cities. Specifically, it investigates the direct and indirect influence of community attachment on resident beliefs and on civic engagement.

An extensive literature exists documenting the relationships between sociodemographic variables and civic engagement (e.g., Koehler and Koontz, 2008, Smith, 1994). Studies have linked income, formal education, age and gender with increased levels of civic engagement. Homeownership and length and location of residence have also been related to civic engagement (Koehler and Koontz, 2008, Larson and Lach, 2010, Manzo and Weinstein, 1987, Smith, 1994). For example, Koehler and Koontz (2008) reported that males with environmentally related occupations and higher levels of political activity were more likely to actively participate in collaborative watershed groups. Further, urban residents and those living closer to streams were more likely to be active participants than those from rural locations and living farther from streams (Larson & Lach, 2010).

These studies provide important information about *who* engages or does not engage in environmental decision making. However, they do little to explain stakeholder motivations for engagement. A smaller subset of studies (e.g., Story and Forsyth, 2008, Pradhananga et al., 2015b) focuses on the social-psychological motivations for civic engagement. Feelings of personal responsibility (Story & Forsyth, 2008), stronger pro-ecological worldviews, higher levels of social capital and trust (Larson & Lach, 2010), self-efficacy (Martinez & McMullin, 2004) and personal norms (Pradhananga, Davenport, &

Olson, 2015) have been associated with higher levels of civic engagement. A study of landowners in Minnesota demonstrated that landowner engagement in water protection is driven by feelings of personal obligation or personal norms, and perceived ability to protect water resources (Pradhananga, Davenport, & Olson, 2015). Although not in the context of water resource management, higher levels of community attachment has also been associated with increased levels of community action (e.g., attending a public meeting on town or school affairs in the community) (Theodori, 2004). Researchers have also found links between community attachment and increased levels of civic engagement in the context of parks and protected area management (Buta, Holland, & Kaplanidou, 2014). This study expands on this line of research by examining the role of community attachment, perceived collective efficacy, and environmental concern in civic engagement.

Community attachment is defined as emotional connection that people have to a particular community, diversely defined. This emotional connection has been described as a feeling of "rootedness" (Hummon, 1992) or belonging. Community attachment is strongly associated with interpersonal connections and social networks that develop at a local scale. However, some research has shown that perceptions of attachment may be influenced by the geographic scale of the place that people are asked to consider (see Brehm, Eisenhauer, & Krannich, 2006). This concept is similar to place attachment, or affective connections people have with a place. However, community attachment places a stronger emphasis on social interactions (Theodori, 2000). A growing body of literature has investigated the links between various attachment constructs and environmental attitudes and behaviors. For example, in a general population study conducted in Texas, Theodori (2004) reported a statistically significant positive influence of community attachment on community action (e.g., attending a public meeting on school or town affairs). In another study of residents in Southern California, community attachment was a significant positive predictor of community-based activities related to fire protection (e.g., attending meeting, volunteering) (Kyle, Theodori, Absher, & Jun, 2010).

Studies on community attachment have typically focused on emotional attachment based on social ties (i.e., social attachment) (e.g., Kyle et al., 2010, Theodori, 2004). A smaller subset of studies (e.g., Brehm, Eisenhauer, & Krannich, 2004, 2006) has expanded on this body of work by examining people's social ties as well as ties to the natural environment. Two distinct dimensions of community attachment have emerged: social attachment and natural environment attachment (hereafter "environmental attachment") (Brehm et al., 2004, Brehm et al., 2006). Brehm et al. (2006) examined the influence of the two dimensions of community attachment on environmental concern. The researchers found that both social attachment and environmental attachment were significant predictors of local environmental concern. Specifically, social attachment was significantly related to attitudes about environmental issues that are "social" in nature (e.g., importance of preserving opportunities for traditional multiple uses of public lands). Environmental attachment on the other hand was predictive of environmental concern related to resource protection. This study's findings suggest that people are invested in and connected to their community for multiple reasons. Further, the distinct bases of community attachment have implications for how attitudes are generated. However, Brehm et al. (2006) did not examine the relationships among community attachment, environmental concern, and pro-environmental behavior. Studies have generally linked higher levels of environmental concern with pro-environmental behavior (e.g., Pradhananga, Davenport, Seekamp, & Bundy, 2015; Schultz, 2001). Yet it should be noted that the relationship between environmental concern and pro-environmental behavior is generally weak (Bamberg, 2003). In the present study, we expand on this line of research by examining the influence of various dimensions of community attachment on concern about stormwater, perceived collective efficacy, and civic engagement in water resource protection.

In the social cognitive theory, Bandura (2000) argues that humans exercise agency through multiple mechanisms. Perceived self-efficacy, or beliefs about one's ability to produce desired results (Bandura, 1977) is a mechanism through which people exercise

personal agency. However, in many situations people rely upon one another to find solutions to problems that affect their lives. Bandura (2000) argues that collective efficacy, or beliefs about the ability of one's group to perform a behavior is a form of socially mediated human agency. Collective efficacy influences people's motivations and actions (Bandura, 2000). People are more likely to take action if they believe that their group (e.g., community, neighborhood) is capable of addressing a problem. While self-efficacy has received much attention in the pro-environmental behavior literature (e.g., Meinhold & Malkus, 2005; Tabernero & Hernández,2011), only a few studies have examined collective efficacy in the context of pro-environmental behavior. Papa et al. (2000) demonstrated how an entertainment-education program inspired collective efficacy and collective action. The authors examined the effect of a radio program on collective efficacy and behavior change among villagers in rural India. They found that social interactions among villagers about the media program led to a higher sense of collective efficacy and community action. However, the authors did not explore the relationship between collective efficacy and collective action. Using a focus group method, Bonniface & Henley (2008) reported an association between collective *outcome* efficacy (i.e., perceptions about the effectiveness of one's group) and waste-minimizing behavior. They compared activists with non-activists and attributed the difference in their pro-environmental behavior to higher levels of collective *outcome* efficacy among activists. Another notable study by Homburg & Stolberg (2006) reported a significant positive influence of collective efficacy on students' private-sphere (e.g., buying recyclable products) and public-sphere (e.g., campaigning for environmental protection) behaviors.

We examine water resource pollution as a collective problem. Nonpoint source (NPS) pollution originates in broad, community-level land use planning policies and actions (e.g., urban growth, stormwater management infrastructure). Solving collective problems such as NPS pollution requires civic engagement and collaboration in water resource discourse, deliberation and decision making. We argue that in the context of a collective

problem such as water pollution (Pradhananga, Davenport, & Olson, 2015), residents' perceptions about their group's ability to address local issues (i.e., collective efficacy) rather than beliefs about one's own ability (i.e., self-efficacy) is a more important determinant of collective action.

The study's conceptual model builds on previous studies of community attachment (e.g., Brehm et al., 2006) and predicts a relationship between social neighborhood attachment and environmental attachment (the two dimensions of community attachment) and environmental concern, neighborhood efficacy, and intentions for future civic engagement. Neighborhood efficacy is conceptualized similar to perceived collective efficacy. We hypothesize that social and environmental attachment have a positive influence on neighborhood efficacy and environmental concern, which in turn positively predict civic engagement.

Section snippets

Study site

The study was conducted in three watersheds within the Twin Cities (Minneapolis-St. Paul) metropolitan area in Minnesota: Mississippi Watershed Management Organization (MWMO), Ramsey-Washington Metro Watershed District (RWMWD), and Capitol Region Watershed District (CRWD). All three watersheds drain into the Mississippi River. The three watersheds spread across Ramsey (all three), Hennepin (MWMO), Anoka (MWMO) and Washington (RWMWD) Counties, and include all or part of the cities of…

Results

Results

Of the 1000 surveys mailed, 292 completed surveys and 186 undeliverables were returned for a response rate of 36%. More than half the respondents were female (52%). This is comparable to the study area census statistics, which indicates that between 51% (CRWD) and 54% (RWMWD) of the population within the study's census tracts are female. Most respondents were white (97%) and not of Hispanic or Latino origin (99%). According to U.S. Census Bureau (2010) data, between 70% (Ramsey County) and 88%...

Discussion

Study findings enhance current understanding of the relationships among community attachment, perceived collective efficacy and civic engagement in the context of water resource conservation. Findings suggest that residents' attachment to their neighborhood through social ties and ties to the natural environment drives their engagement in water resource protection. This study shows that more attention should be focused on the connections between community level variables, and an individual's...

Conclusion

Study findings show that residents' engagement in water protection is rooted in two distinct dimensions of community attachment: social attachment and environmental attachment. Residents who are attached to their neighborhood through social ties are more likely to believe that others in their neighborhood are capable of addressing local water problems and are more likely to be civically engaged in water resource conservation. Residents who are attached to their neighborhood through ties to...