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Fostering water sensitive citizenship – Community profiles of engagement in water-related issues

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ABSTRACT

Citizen engagement in water-related issues is vital for securing future water supplies and protecting waterways. In this paper we explore elements of engagement in water related issues – what people know, what they value and their actions, and describe how these cohere in ways that can inform planning and interventions. Drawing on a nationally representative survey ($N = 5194$) and an interdisciplinary conceptual framework, this paper outlines how groups within the population differ on engagement in water-related issues. We identify five key groups: (i) the Disengaged, (ii) Aware but inactive, (iii) Active but not engaged, (iv) Engaged but cautious, and (v) Highly engaged. Homeownership, having a garden, being older, and life experiences such as experience of water restrictions had a significant impact on each of the engagement profiles. The utility of this analysis is demonstrated through finding that the groups have distinct views on two key policy examples, support for raingardens and willingness to pay for waterway protection. We suggest ways of targeting individual and community interventions to reach the identified groups.

1. Introduction

Scarcity of freshwater resources is a critical global issue (Vorosmarty et al., 2010): population growth, rapid urbanization and anthropogenic climate change are increasing water demand and leading to deteriorating waterway health (Schewe et al., 2014; Vorosmarty et al., 2010). Protecting freshwater resources requires transitioning toward more sustainable water management approaches, developing 'water sensitive cities' (Brown et al., 2009; Marlow et al., 2013; Vorosmarty et al., 2010).

Sustainable water management incorporates diverse initiatives. Household-level initiatives may promote behaviors that save water or reduce pollution. At a larger scale, alternative water sources, decentralized water systems, or urban design initiatives that mitigate stormwater pollution may be considered (Brown et al., 2009; Marks and Zadoroznyj, 2005). There is increased recognition that new approaches to water management need to consider not only technical and biophysical solutions to water scarcity, but also the socio-cultural context in which these solutions are implemented (Brown et al., 2009; Marks and Zadoroznyj, 2005; Pahl-Wostl et al., 2013). Therefore, a critical element of transitioning to water sensitive cities and towns is fostering an engaged citizenry – citizens that understand, value and actively support this transition, or what we term 'water sensitive citizens'. Identifying how communities engage with water-related issues provides a necessary foundation to inform initiatives that seek to change behavior or build support for new policies or investment (Marks and Zadoroznyj, 2005; Marlow et al., 2013). Community opposition to potable recycled water schemes and the derailing of plans to implement these schemes (CH2MHILL, 2004; Hurlimann and Dolnicar, 2010), demonstrate the importance of building community support for new water initiatives.

In this study we explore what characterizes engagement with water-related issues and the individual and societal factors that influence engagement. Although many new approaches to water management focus on urban settings (Marlow et al., 2013), learning from both urban and non-urban settings can inform our broader understanding of factors that influence engagement. We aim to provide a broader socio-cultural understanding of water engagement, and an evidence-base to enable water professionals to target engagement tools to promote an active citizenry.

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1.1. Engagement framework

Drawing from the field of educational psychology (Fredricks et al., 2004), we propose a multidimensional model of water engagement that incorporates three distinct elements: cognition, emotion and behavior. Cognitive engagement refers to knowledge about key water-related issues, and the capacity to apply this knowledge. Emotional engagement incorporates positive attitudes about water and water management, such as support for alternative water sources (James et al., 2010), and positive attitudes toward the environment which could be reflected in a person's identity as a pro-environmental person (Stets and Biga, 2003). Behavioral engagement reflects how involved the individual is in water sensitive behaviors and practices, such as reducing water use, or reducing pollution. It is likely that an individual who is highly engaged in water-related issues – a water sensitive citizen – understands important water concepts and issues, supports diverse water initiatives, and acts to address water issues (Fig. 1).

Our conceptualization of water sensitive citizenship aligns with the concepts of environmental and ecological citizenship (Aslin and Lockie, 2013; Dobson, 2007). These notions of citizenship incorporate knowledge and attitudes (Dobson, 2007; Hawthorne and Alabaster, 1999), public behaviors such as influencing political processes or contributing to waterway restoration (Aslin and Lockie, 2013), and personal behaviors such as consumption choices, which have public implications (Dobson, 2007).

1.2. Moving beyond the 'average' water user

'Community' rarely refers to a cohesive or homogenous unit; more typically, 'community' comprises groups of people with diverse (and sometimes competing) attitudes and interests (Harrington et al., 2008). Many policy approaches to water management consider households or individuals as homogenous units (Allon and Sofoulis, 2006), and many engagement initiatives are broadly disseminated using utility bills or postal interventions. Because information is more effectively transmitted if it is relevant or aligned with values (de Vries et al., 2014), broad-based initiatives may be less effective in certain groups. Identifying different profiles of engagement, and factors associated with engagement, can highlight 'footholds' for intervention, where initiatives can be more effectively targeted to specific social groups or settings (Van de Velde et al., 2010). For example, one study identified that climate change deniers value caring societies, and economic and technological development. Framing messages to emphasize these values increased support for climate change action (Bain et al., 2012). Health research highlights the importance of addressing language barriers, organizational trust, and social disadvantage (Bonevski et al., 2014).

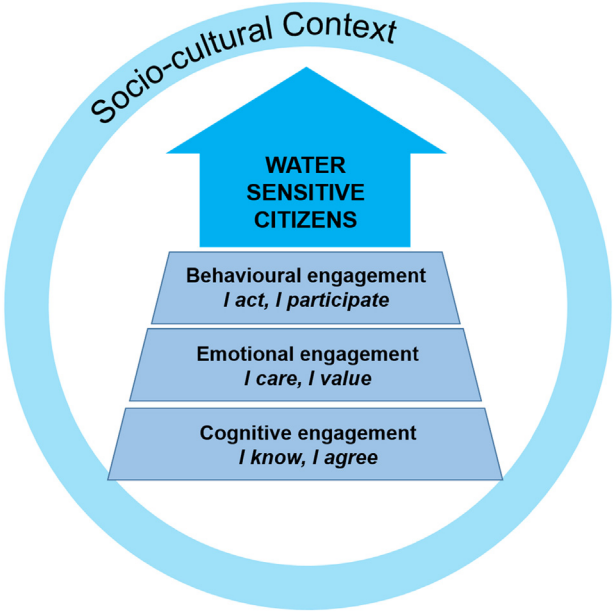

Fig. 1. Framework for assessing water-related engagement.

1.3. The current study

The current study identifies profiles of community members, based on their diverse modes of engagement in water-related issues, using a representative sample of Australian adults. Our engagement framework encompasses cognitive, emotional and behavioral elements of sustainable urban water management. We aim to explore the following questions using an inductive cluster analysis approach: (i) Can water-related cognition, emotions, and behaviors reliably differentiate water users into specific groups? (ii) How do these groups differ with regard to demographic, household and psychosocial characteristics; and (iii) Do these groupings predict support for two policy initiatives: support for raingardens and willingness to pay for waterway protection?

2. Methods

2.1. Participants and procedure

Adults residing in Australia ($N = 5194$) were recruited by a social research company utilizing a permission-based, online panel. The sampling frame targeted a representative sample of Australians, based on gender, age, education and state of residence. Eligible panel members were invited to participate via email. The 25-min, online survey was administered during February–March 2014. Institutional ethical clearance was obtained prior to study commencement.

2.2. Variables used to generate clusters

2.2.1. Cognitive engagement

- *Water-related knowledge*: 15 items about the urban water cycle, water management and impact of household activities on waterways were adapted from previous research (James et al., 2010) and based on input from Australian water professionals. Fourteen items were rated on a 5-point scale (1 = '*strongly disagree*' to 5 = '*strongly agree*'). An additional multiple choice item was used: 'Which of the following options best represents your understanding of what a catchment is?'(a) The area that retains water like a wetland or a marsh; (b) all the land area that drains to a specific river or waterway (*correct response*); (c) a reservoir that serves as a water source; (d) a small building where water is stored; (e) none of these; (f) do not know. Neutral responses ('don't know' or 'neither disagree or agree') were coded as incorrect. A water knowledge score was calculated as the number of items with a correct response (range 0–15).

2.2.2. Emotional engagement

- *Attitudes to alternative water sources*: six items gauged respondents' support for: recycled water, desalinated water, and treated stormwater for drinking and non-drinking purposes. These were rated on a 5-point Likert scale (1 = '*do not support at all/unwilling*' to 5 = '*completely supportive/very willing*'). The mean of these items formed a '*Support for alternative water sources*' score (range 1–5, Cronbach's $\alpha = 0.73$).