Non-price Drivers of Household Water Consumption

Key Drivers of Household Water Consumption

There is increasing pressure for society to move to more sustainable consumption. This applies particularly to natural and energy resources, many of which are limited in their supply. Access to clean water is seen as a basic human right (Phipps and Brace-Govan, 2011), and the sustainable management of water resources in an increasing number of countries (e.g., Australia, America, and even the UK), has become a pivotal societal and political issue. Governments need to think beyond volume restrictions and price to manage this scarce resource, and increasingly the role of marketing tools and techniques has been highlighted as a way to lead to voluntary behaviour change (Kotler 2011) which ultimately changes underlying attitudes, rather than simpler, but more frequently used and politically contentious supply side strategies. This study reports on Project Hydro, a social marketing initiative, in a large regional city in Australia, that has resulted in reductions in water consumption of thirty per cent over five years. Using a large scale survey of 909 residents from the drought affected area, this study also provides a model of the key drivers of household water consumption by applying an augmented Theory of Planned Behaviour model. Specific factors of relevance to the consumption of water are identified and reported on.

Project Hydro was launched as a social marketing intervention to address these challenges through a process of voluntary behaviour change designed to achieve specific, measurable objectives. Project Hydro was defined as a social marketing intervention in relation to Andreasen’s (2002) benchmarks which enable identification of a social marketing programme. Key themes of Project Hydro included an outdoor watering ban, water reduction targets for the population, new supply plans, extensive promotion of a heavily subsidised scheme to provide the public with water efficient devices, subsidies, community consultations, and a targeted marketing communications campaign (price was ultimately fixed and unable to be changed without extensive changes to legislation). A social marketing intervention must be more than marketing communications based on a social cause (McDermott et al., 2005), and genuine social marketing interventions would typically use a variety of social marketing concepts to affect behaviour change amongst the target population.

The national mood was one of addressing what was identified to be a major local and national threat. It was in this context of increasing community anxiety about the permanence of a change in rainfall and water storages that the research was undertaken. The research team had already undertaken several surveys about water use for the water authority and it was decided to fund a large-scale survey to assess the effectiveness of the latest social marketing campaign. Attitude and behaviour change are central to understanding the impact of marketing interventions and the TPB framework was adopted as the framework for examining attitude and behaviour change towards sustainable water use at a household level, within the context of Project Hydro.

TPB is an extension of Fishbein and Ajzen’s (1975) expectancy-value model and asserts that an individual’s intention can be predicted by the individual’s attitude towards the behaviour, their social norms, and their degree of perceived behavioural control. Interested readers can find an excellent review of the TPB in East et al. (2008). The TPB has a rich history in the area of voluntary behaviour change and social causes. Furthermore, meta-analysis studies have shown the basic TPB to be robust and useful (e.g., Armitage and Conner, 2001). However, increasingly researchers have tried to augment the TPB with other factors of importance to a particular context. Often this has increased its explanatory power. Therefore, other factors of relevance to household water consumption were added to augment the conventional TPB antecedents.
We begin the research by augmenting the TPB in the context of water consumption with X new variables, including an individual’s perceived moral obligation, and an individual’s perceived water right. Perceived moral obligation is the degree to which an individual feels morally obliged to perform a particular behaviour. It is likely to be relevant in social contexts where consumers consider the effect of their decisions upon others (e.g., donating blood, drink driving etc.). Moral obligation has been used as a TPB variable by Gorsuch and Ortberg (1983) who find it augments the TPB mode in situations which are morally relevant. Hart et al. (1997) criteria for defining a moral situation are consistent with the consumption of water in a drought affected. Some more applied research has also identified moral obligation as an important indicator of water consumption (e.g., Lam 1999). Lam (1999) also includes perceived water right to enhance the explanation of water consumption decisions. Perceived water right is the degree to which individuals feel they have a right to use water as they wish and has also been shown to be instrumental in individual’s water consumption decisions (e.g., Clarke, 1991; Phipps and Brace-Govan, 2011).

We further augment the TPB model by proposing that reciprocity is important in individual consumption decisions. Consumers are increasingly seen behaving in the context of reciprocal tendencies in an exchange relationship (e.g., Fehr and Gachter, 2000). Specifically, reciprocity is an “…in-kind response to beneficial or harmful acts.” (Fehr and Gachter, 2000). In other words consumers are often seen to reward kind behaviours and punish unkind behaviours, even though it may be costly for them (see for example Falk and Fischbacher, 2006). Therefore, we expect that consumers’ attitudes towards the management of their water by their local water authority will be instrumental in predicting how individuals respond to the social marketing initiative. Thus, we expect reciprocal behaviours will emerge based on the water authority’s communication and management of the water initiative. Consequently if consumers perceive their water is being managed well they will exhibit positive reciprocity and reduce their water consumption. On the other hand if they feel their water is not being managed well they may pay less attention to their water consumption. Therefore, we predict that consumers’ attitudes towards the water authority’s management of water is positively associated with their consumption of water. Households’ participation in Project Hydro was also expected to be important in influencing individuals future consumption decisions, along with other socio-economic variables.

Method

A survey was constructed based around the conventional TPB variables and the new variables of importance to the water consumption context. The procedure was developed along the lines of the TPB manual (e.g., Francis et al., 2004), a widely used resource for conducting TPB research. Residents of a large, regional city in Australia who had been experienced a sustained drought were surveyed. The measures were presented to respondents as statements anchored by Likert scales from 1 (strongly disagree) to 5 (strongly agree).

The survey was administered to participants and non-participants in Project Hydro, and was conducted by a professional market research organisation using CATI. In total there were 599 non-participants of Project Hydro from the general population (a response rate of 34 per cent), and 310 respondents from the Project Hydro target population (a response rate of 58 per cent). Surveys were administered randomly within their respective sampling frames. The samples broadly reflected the characteristics represented in other water usage studies. Non-response bias was not evident using different tests. Likewise there was no evidence of Common Method Bias.
Findings and Discussion

OLS regression was used to compare the conventional TPB model with the augmented version. There was statistical support for the augmented model over the conventional model, illustrated by better model fit and a statistically significant F-test. The model coefficients were also in line with what was expected. Therefore, the addition of perceived moral obligation, perceived water right, attitude towards the water authority, participation in Project Hydro, the interaction between participation in Project Hydro and perceived behavioural control, and the other demographic variables improves model fit. Therefore, in the overall model, attitude towards water conservation and social norms were both positively related to intentions to conserve water, and perceived behavioural control was negatively associated with intentions to conserve water. Perceived moral obligation was not found to be associated with intentions to conserve water. However, it should be noted that perceived moral obligation was extremely high (e.g., $M=4.77$ on a 5-point scale) and appeared to act like a constant in the model (i.e., there was no significant variation). As expected, perceived water right was positively associated with intention to conserve water and attitude towards the water authority is positively associated with intentions to conserve water. Participation in Project Hydro was not associated with water conservation. However, participation in Project Hydro significantly influenced intentions to conserve water, contingent on perceived behavioural control. Thus participation in the social marketing initiative may reduce water consumption if individuals perceive they have a sufficient level of behavioural control (e.g., they are able to execute changes in water consumption).

Drawing on literatures in the areas of social marketing, environmental management and social psychology, the findings here suggest that the conventional TPB model can be augmented in the context of water consumption by adding constructs such as an individual’s attitudes towards the water authority, their perceived water right, and their participation in Project Hydro. The conventional TPB model is largely valid, but including the new variables enhances the model’s validity both statistically and substantively. Therefore, despite its widespread application in research into behaviour change (Armitage and Conner, 2001), the findings here indicate the importance of modifying the basic model based upon its context and reflect, to some degree, the findings of other research in a different cultural context (e.g., Lam, 1999).

This paper makes two key theoretical contributions. Firstly, consumers’ water consumption decisions are based on their attitudes towards the management of the water problem. Thus, if consumers felt the water authority was doing a good job they had higher intentions to conserve water. Therefore, the notion of reciprocity seems important in influencing water consumption decisions, consistent with emerging research in the economics literature (e.g., Fehr and Gachter, 2000); it’s not what you do that’s important, but how you communicate what you do when managing a scarce public resource. Consumers that perceive an organisation is managing resources effectively are likely to reward that organisation by reducing their consumption to a greater extent than what they would have done otherwise. We believe this finding is applicable in other similar social marketing contexts too (e.g., management of public transport, congestion, blood donations etc.) Therefore, attitudes towards the water authority should be seen as a central construct in models of water consumption behaviour and future research.

Also of interest to the social marketing discipline, it should be noted that participation in the social marketing intervention was alone not sufficient to reduce consumption; participation was effective in reducing water consumption contingent upon high levels of perceived behavioural control. This is largely consistent with research in environmental management where prominent scholars have noted how individuals often face a variety of physical constraints which affect their
“…environmentally significant behaviour…” (Stern, 2000, p. 407). Therefore, the programme may well be influential in changing *attitudes* towards the consumption of water but if an individual feels that water facilities are inefficient then they are less likely to change their behaviour. Therefore, behavioural change programmes must focus not only on changing attitudes in order to reduce consumption, but also on increasing individuals’ perceived behavioural control.
References


