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Addressing Sustainable Living Using a Collaborative Approach and Multi-Disciplinary
Techniques

Lee-Ann Wilson

School of Public Health, Queensland University of Technology, Brisbane, Queensland
Australia

Professor Gavin Turrell

School of Public Health, Queensland University of Technology, Brisbane, Queensland
Australia

Dr Esben Strodl

School of Psychology and Counselling, Queensland University of Technology, Brisbane,
Queensland, Australia

Dr Katrina Giskes

School of Public Health, Queensland University of Technology, Brisbane, Queensland
Australia

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Abstract

In order to achieve meaningful reductions in individual ecological footprints, individuals must dramatically alter their day to day behaviours. Effective interventions will need to be evidence based and there is a necessity for the rapid transfer or communication of information from the point of research, into policy and practice. A number of health disciplines, including psychology and public health, share a common mission to promote health and well-being and it is becoming clear that the most practical pathway to achieving this mission is through interdisciplinary collaboration. This paper argues that an interdisciplinary collaborative approach will facilitate research that results in the rapid transfer of findings into policy and practice. The application of this approach is described in relation to the Green Living project which explored the psycho-social predictors of environmentally friendly behaviour.

Following a qualitative pilot study, and in consultation with an expert panel comprising academics, industry professionals and government representatives, a self-administered mail survey was distributed to a random sample of 3000 residents of Brisbane and Moreton Bay (Queensland, Australia). The Green Living survey explored specific beliefs which included attitudes, norms, perceived control, intention and behaviour, as well as a number of other constructs such as environmental concern and altruism. This research has two beneficial outcomes. First, it will inform a practical model for predicting sustainable living behaviours and a number of local councils have already expressed an interest in making use of the results as part of their ongoing community engagement programs. Second, it provides an example of how a collaborative interdisciplinary project can provide a more comprehensive approach to research than can be accomplished by a single disciplinary project.

Keywords: Environmental Concern, Environmentally Friendly Behaviour, Theory of Planned Behaviour, Interdisciplinary, Public Health

Stream: Technical, Political and Social Responses

Addressing Sustainable Living Using a Collaborative Approach and Multi-Disciplinary Techniques

There is little doubt that climate change constitutes a threat to human health and wellbeing. Already, researchers and policy makers, across a large variety of disciplines have dedicated a great deal of time and energy towards understanding its causes, effects, and mitigation and adaptation pathways (IPCC, 2007). It is known that in order to achieve meaningful reductions in individual ecological footprints, individuals in developed and rapidly developing nations must dramatically alter their day to day behaviours (Semenza, et al., 2008). There is a demand for effective interventions which are evidence based and there is a greater necessity than ever for the rapid communication of information from the point of research, into policy and practice (Frumkin, Hess, Luber, Malilay, & McGeehin, 2008; Martinot, Sinton, & Haddad, 1997). A number of health disciplines, including psychology and public health, share a common mission to promote health and well-being and it is becoming clear that the most practical pathway to achieving this mission is through interdisciplinary collaboration. This paper argues that a cross discipline, collaborative approach will facilitate policy and practice relevant research and aid in the rapid transfer of findings into practice. The application of this approach is described in relation to research which explores the predictors of environmentally friendly behaviour.

The Health Effects of Climate Change

Climate change and its immediate causes affect human health in a number of ways: most obviously through the effects of extreme natural events, including cyclones, floods and bush fires. While no one particular weather event can be attributed to climate change, the Intergovernmental Panel on Climate Change 2007 assessment report found that both the frequency and intensity of cyclones in the Pacific have increased over the past 20 years (IPCC, 2007). In Queensland (Australia), for example, in 2009 unprecedented flooding saw the mosquito borne dengue virus spread to areas never effected before (Rynor, 2010), while

the United States has experienced unusually harsh winters over the past few years (Breckler, 2010).

Notably, the human behaviours that are contributing to climate change are also having a more immediate negative impact on health and wellbeing (Castro-Giner, et al., 2009; Suwanwaiphatthana, Ruangdej, & Turner-Henson, 2010). An increasing reliance on motorised transport, fuelled by the oil industry, has led to reduced physical activity and poor air quality (Castro-Giner, et al., 2009; Sallis, Frank, Saelens, & Kraft, 2004). The lack of physical activity has been strongly associated with increased risk of heart disease, diabetes and colon cancer (Capewell, et al., 2010; Gill & Cooper, 2008; Wolin, Yan, Colditz, & Lee, 2009); and poor air quality is associated with respiratory and lung disorders and, to some degree, with poor birth outcomes (Bobak, 2000; Castro-Giner, et al., 2009). Both the proximal and distal health outcomes can be mitigated by behaviour change initiatives that would see individuals and communities adopting a dramatically more carbon light lifestyle. These individual level behavioural changes would inevitably lead to environmentally positive implications for business and industry (Barr, 2003). Achieving these benefits may be best achieved through interdisciplinary, collaborative research.

Conducting Interdisciplinary and Collaborative Research

The scientific disciplines have become increasingly specialised and the majority of research conducted adopts only the methods and perspectives of one particular field. However, real world phenomena are generally complex and tend to reach across multi disciplines. Interdisciplinary research is increasingly encouraged by funders and practitioners because it offers the opportunity to produce coherent and practice relevant tools to deal with complex social issues (Hulme & Toye, 2006). This funding bias is certainly justifiable in regards to climate change research which is impacting across many disciplines, e.g. economics (Klein, et al., 2007), geology (Billeaud, Tessier, & Lesueur, 2009), mathematics (Ribbe, 2005), psychology (Stoll-Kleemann, O'Riordan, & Jaeger, 2001), and public health

(Frumkin & McMichael, 2008) to name a few. There is also gathering evidence that interdisciplinary approaches to tackling health and climate based challenges are providing positive outcomes (Favali & Beranzoli, 2009; Gortmaker, et al., 1999). However, truly integrative and practice relevant research is an ideal and there are a number of challenges to be met in the process (Wear, 1999).

The first of these challenges lies in the divergent perspectives held by the different disciplines. As different disciplines have evolved to favour particular methodologies and world views, identifying common ground and collaborating towards a common end can be difficult. The other major challenge stems from the first and that is the challenge of fostering effective communication, as individuals from separate disciplines may be accustomed to very different research procedures and may be seeking different goals or outcomes from the research. Thus, the timing of collaborative efforts should be carefully considered. The collaborative procedure employed in the Green Living project is outlined in Figure 1.

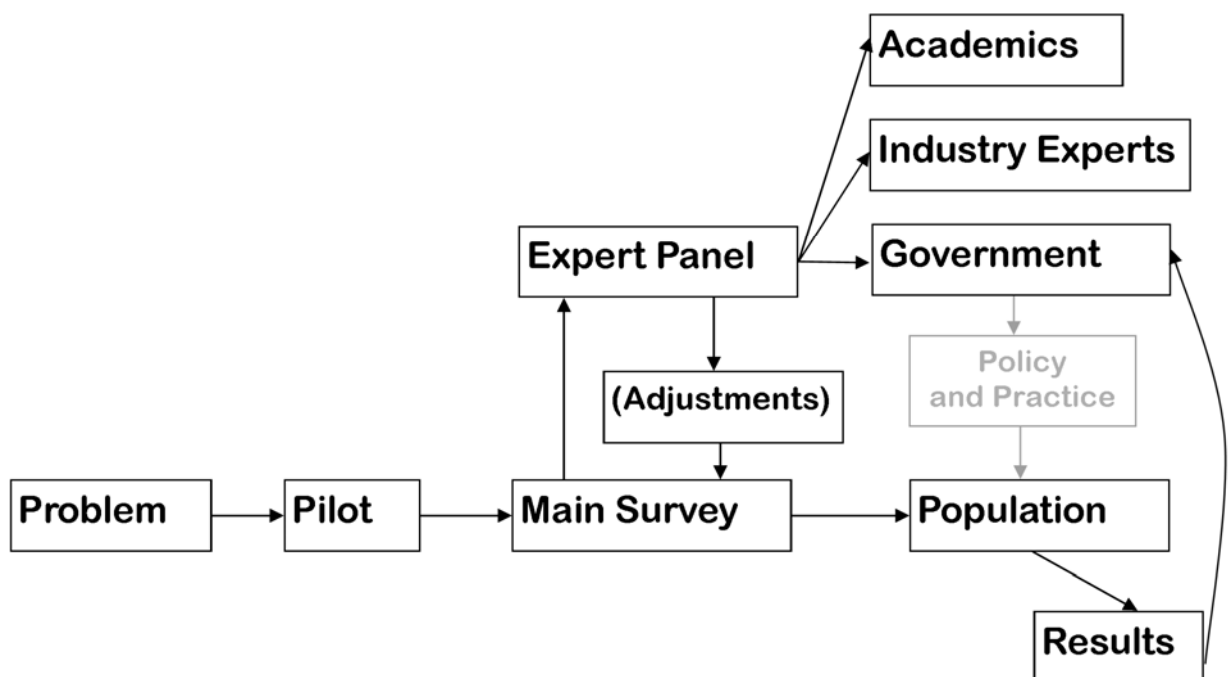


Figure 1. Outline of the procedure employed for the Green Living project

The Green Living project draws on both public health and psychology and it was decided in consultation with researchers from each field how best to structure the survey so that it incorporated the best from both disciplines in a way that could be used most productively.

The Problem: Research Questions and Theoretical Approach

It is important to begin any research project with a clearly identified research question (or specific hypotheses). It is the role of the individual researcher or initial research team to identify these questions (or hypotheses) and then to explore the current knowledge in depth so that the most appropriate methods can be employed. The research questions for Green Living project were identified as part of a research project exploring the predictors of environmentally friendly behaviour. The primary research question asked whether the Theory of Planned Behaviour (TPB) variables of attitudes, subjective norms, perceived behavioural control and intention, as well as underlying beliefs, and additional variables such as environmental concern and altruism can be used to explain environmentally responsible behaviours (such as switching off lights when leaving a room). Once the research questions are identified, it is necessary to adopt a sound theory based approach to answering them. For the Green Living project, the theoretical approach was decided after an extensive review of the literature but before engaging in the collaborative process.

The theory selected was the TPB (Ajzen, 1991). The TPB is an established theory which has previously been applied to understanding people's environmentally friendly actions (Oreg & Katz-Gerro, 2006). According to the TPB, the degree to which a person is in favour of performing a particular behaviour (attitude), feels social pressure to perform a behaviour (subjective norm), and feels they have control over performing the behaviour (PBC), together influence intention to perform the specified behaviour (Ajzen, 1991). The actual performance of the behaviour is generally assessed through a follow-up survey. Underlying the TPB is the assumption that attitudes, subjective norms and perceived behavioural control are antecedent

by salient beliefs which reflect an individual's intention and subsequent behaviour (Ajzen, 1991). The Green Living survey utilised the TPB and asked about specific beliefs related to switching off lights and walking for transport which antecedent attitudes, norms, perceived control, intention and behaviour, as well as a number of other constructs such as environmental concern and altruism.

Method

Following a qualitative pilot study, and in consultation with an expert panel and industry professionals, we constructed a self-administered mail survey which was distributed to a random sample of 3000 residents of Brisbane and Moreton Bay. The Green Living survey was primarily informed by the TPB and asked about attitudes, norms, perceived control and intention in relation to the specific behaviours 'walking for transport' and 'switching off lights when leaving a room'. The Green Living survey also included a number of other constructs such as environmental concern and altruism. A second, follow-up survey was conducted four weeks after a receipt of a completed survey, which specifically asked about recent walking for transport and switching off lights behaviours.

Conducting a Pilot Study

The pilot study, which was not included in the interdisciplinary process, involved a qualitative structured email survey, which was informed by the TPB and asked 12 adults from South East Queensland about five specific behaviours. The behaviours were: reducing consumption of red meat by at least half, increasing use of active transport by at least two trips per week, installing solar power or hot water to a residence, regularly buying local or organic produce and switching off lights when leaving a room, even for a few minutes. Items included in the survey asked participants to report the advantages and disadvantages of these behaviours, to list those individuals or groups they thought would approve or disapprove of these actions, and factors or circumstances that would make it easier or more difficult to perform these actions. For the Green Living mail survey that followed only two of these

behaviours, walking for transport and switching off lights when leaving a room, were included based on feedback from participants and the expert panel.

Constructing the Main Survey

The Green Living survey was constructed based on the results of the pilot study and following an extensive review of the literature. It consisted of five sections and drew on constructs from both the public health and psychology domains. The first section focused on measuring sense of community. The second and third sections utilised TPB constructs and specifically asked about switching off lights and walking for transport. The fourth section employed more of a public health approach and asked about such constructs as willingness to make sacrifices in order to protect the environment, pro environmental behaviour, and which actions, government or personal, would be necessary to achieve significant improvements in environmental quality. The final section asked about demographic characteristics such as date of birth, living arrangements and household income. Once the Green Living survey was drafted, it was sent out to an expert panel for comment.

Consulting an Expert Panel

The expert panel was conducted on three fronts: expert researchers (academics), industry experts and State and Local Government representatives. First, six prominent researchers with experience in the Theory of Planned Behaviour and the social-psychological predictors of environmentally friendly behaviour were asked to comment on the survey content and methods. Responses were varied and ranged from the introduction of new constructs and recommending alternative scales to improving the structure and format of the survey. Importantly, this provided outside assessment of the face validity and theoretical integrity of the survey.

Consultants from major Australian energy providers and researchers in the field of active transport were consulted in regards to the appropriateness of the outcome measures employed. It was noted by one energy consultant that, while a few individuals switching off

lights would have very little impact on environmental quality, exploring and influencing the beliefs underlying these behaviours has the potential to change behaviours across society, thereby resulting in a significant reduction in CO₂ emissions. Another of the energy advisors provided explanatory wording for the outcome variable which asked about switching off lights when leaving a room; e.g. 'For incandescent lights this refers to switching off lights whenever you leave a room, even for a few minutes. For either the new compact fluros or traditional fluros, this refers to switching off lights if you are leaving a room for more than 15 minutes'. This was an important clarification on an issue that was confusing for participants in the pilot study and for researchers involved in the study but lacking the necessary specific knowledge.

Finally, a few representatives from state and local government were approached and asked to give feedback on the project. This process was particularly important as a major goal of the research was to produce results that would be practice and policy relevant. Consultation with local and state government representatives could achieve two ends; first, providing feedback and contributing content for the survey and second, establishing collaborative relationships so that a feedback loop could be established facilitating the timely application of findings. As a result of discussions with a Senior Director from the State Government Office of Climate Change a number of additional items were added to the survey. These items explored the reasons people give for not adopting environmentally friendly behaviours. One Local Council contributed additional funding to the project so that its scope could be extended to include the council's boundaries. In addition the Local Council requested a report outlining the results so that the findings could be utilised for community engagement activities. At around the same time as the expert panel consultation process was underway, a media release and subsequent article in the local paper highlighting the project resulted in two other local government organisations making contact and asking to be informed about the progress and results of the project.

Selecting the Sample and Conducting the Survey

As a direct result of the collaborative efforts described above, it was decided to include both Brisbane and Moreton Bay local government areas in the sample. Further, based on statistical power requirements and council consultations, it was decided that an initial sample size of 3000 would be appropriate. Data for a random sample of 30,000 adults was provided by the Australian Electoral Commission - it is compulsory to vote in Australia and so this represents an appropriate method for selecting a sample from the population. 3000 individuals were then randomly selected, 2000 from Brisbane and 1000 from Moreton Bay.

The implementation of the Green Living survey was designed as closely as possible to conform to the Dillman method (Dillman, 2000), which is frequently utilised in public health research as this method has been found to elicit the highest response rates. All those selected were sent a pre-notice letter, informing them that a survey would be arriving in approximately one week and asking for their participation. One week later, the main survey was mailed to participants with a cover letter and herbal tea bag as a gratuity. Three weeks later a replacement survey with a cover letter was sent to anyone who had not returned a survey. The overall response rate was 41 percent ($n = 1185$). Four weeks after the return of completed surveys, participants were recontacted by either phone or mail and asked about their switching off lights and walking for transport behaviours over the preceding four weeks (Response Rate = 70 percent, $n = 830$). They were also asked if they would like feedback on the results of the survey. Twenty six percent of participants in total, which was equivalent to thirty seven percent of those who had responded to the follow-up survey, indicated that they would like feedback and provided contact details.

Conclusion

Tackling environmental issues is an immediate and serious concern for policy makers, local governments, and environmental groups, to name a few, and a great deal of time and money has already been invested in educating the public and introducing new schemes.

Unfortunately, while most people know what they should be doing in order to protect the environment (Gagnon Thompson & Barton, 1994), very few are doing it. The aim of this research has been to explore the predictors of environmentally friendly behaviour with an interdisciplinary, collaborative approach utilising established psycho-social theory. The challenges of an interdisciplinary approach lie in the fact that divergent perspectives are held by the different disciplines and this has implications for fostering effective communication. To overcome these issues it is important to plan the research carefully, looking for appropriate opportunities to incorporate collaborative efforts and to identify where it might be necessary to limit the number of contributors to a particular stage of the research process.

In the case of the Green Living project described above, the benefits of an interdisciplinary approach have been numerous, including adding value to the survey, providing some additional funding and providing an avenue for the findings of the research to be directly applied by community liaison officers. All three of the sources identified for the expert panel were able to contribute to the content of the survey. The use of academic experts with experience in conducting TPB and environment based research ensured the scientific integrity of the survey. Industry experts were able to provide feedback and insight that was not available or apparent without their advice and fostering a collaborative relationship with government liaisons helped to maximise the relevance of the research.

This research will inform a comprehensive and practical model for predicting sustainable living behaviours and, importantly, at least three local councils have expressed an interest in making use of the results of this study as part of their ongoing community engagement programs. This approach serves as a model for future research design. As well as being informed by appropriate social-psychological theory, by consulting with council representatives and with industry experts, there is an increased likelihood that the results of this research will be both practice and policy relevant. Forging alliances with those who are in a position to immediately utilise the findings of the research for public outreach initiatives has

the potential to improve the quality and appropriateness of research and opens avenues to the effective and timely communication of research findings.

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