Finding the Sustainable Few: Environmental Behaviour and Issues of self-identity, context and demographics

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Abstract

This paper examines environmental behaviours in an effort to identify who are the sustainable few, the minority that is integrating its environmental values into their everyday behaviours. Often found to be well educated, middle class women and the elderly, this research combines data analysis with previous research to get a picture on this sustainable minority. With increasing demands for change in consumption patterns, sustainable lifestyle messages with an emphasis on individual's behaviour have been the focus of much debate in sustainable development. The current levels of over consumption are taxing on our environment and changes in individual behaviour have been called for as a remedy to this exhaustive use of resources. This research seeks to understand the role the individual has in fulfilling sustainable development as it relates to individual consumption levels. The main objectives of this study are to focus on the different dimensions of pro-environmental behaviour that are currently being practiced. A theoretical exploration, using theories of demography, self-identity and context is employed to discuss the motivations behind pro-environmental behaviours. The sociological viewpoint will be able to investigate the external, cultural and practical factors that play into the practice of environmental behaviours. The data comprises of a postal survey in Bochum, Germany of 50 environmental behaviours in the categories of: 1. energy conservation 2. Mobility and transportation, 3. Waste avoidance, 4. Consumerism, Recycling and 5. Vicarious, social behaviours towards conservation. Statistical factor analysis is used to distinguish new dimensions of behaviours practiced by respondents. The results are compared to previous studies in an effort to determine if there is applicability to other contexts. The current statistical and research methodology is also evaluated for applicability to future studies of environmental behaviour.

1. Introduction

In the debate over environmental problems, more and more pressure is coming to focus in on the individual choices that we make. With the Rio conference in 1992, Agenda 21, was created and outlined that over consumption must be halted if we are to live sustainably (Sanne, 2002). This International policy recognized that the combined effects of individual consumptive decisions had both environmental effects as well as economic. Changes were called for from both consumers and producers to achieve sustainability. The most commonly used definition of sustainability comes from the Brundtland report and gives a vague notion of actions that meet the needs of the present without compromising the ability of future generations to do the same (WCED, 1987). This holistic definition gives way to many broad interpretations that are beyond the scope of this research. The focus of this research will be on the consumer side with pro-environmental behaviours, which are everyday behaviours that act to minimize affects on the environment. These include our everyday, habitual actions concerning, energy use, mobility, food, and consumption which have as large of a collective impact as dirty industries. These many small choices, looked at individually seem insignificant to the practioner but, have a high environmental impact when looked at collectively.

Since the Brundtland report in 1987, the cost of high consumption has been recognized, the 26% of the world's population living in developed countries consumes 80-86% of non-renewable resources and 34%-53% of food products (WCED,1987). These figures also point to the fact that the products of our consumption are coming from much farther away, as the production of our local economy cannot keep up with our consumptive demands. Our consumption creates many issues, one of them being environmental degradation, as the production, use and disposal of goods pollute and reduce the resource base. Ecological Footprint, a type of environmental accounting keeps a measure of how much land is needed to support average lifestyles. In Western Europe this would require 6.3 hectares of land per person, and if everyone had such a lifestyle 3.4 planets (Best Foot Forward, 2005). The same lifestyle in America would require 12.3 hectares of land per person and 6.6 planets.

Obviously, our daily consumptive habits must be changed if we are to achieve a sustainable society. We are currently experiencing a tragedy of the commons, whereby people are operating on the resource base of the planet as if their actions were the only impact, when the collective impact of such mentality is leading to widespread environmental degradation. This is not to say that most people are not aware of environmental issues; in national surveys, it has been shown that "empirical findings point towards a high, and globally growing, sensitization to environmental concerns" (Brand, 1997:205). General countrywide trends show that Germany ranks the highest in environmental concerns, followed closely by South Korea, Mexico, Canada, New Zealand and Australia (Brand, 1997). With this concern for the environment the question must be asked, why is it that people are not becoming more environmental in their actions? Perhaps they do not want to be identified as environmental or green and thus their consumption is more than just what they buy, but who they see themselves as.

1.1 The facets of consumption

Consumption has been viewed most often as based on utility. This predominant economic understanding follows on the premise that consumption "satisfies human needs by being useful, good or producing happiness" (Sanne, 2002:275). This theory states that people will use their economic means to the fullest to fulfil their needs. A second take on consumption is offered by the differentialist approach, whereby people use their consumption to distinguish themselves in society. In this theory, "consumption is regarded as a system of signs, which creates meaning in terms of a social order" (Sanne, 2002:275). Here consumption moves beyond just fulfilling a need, whereby in the first view the consumption could be to eat, in this view consumption would be to eat in a fine restaurant. This would show that the way the individual chooses to consume sends a message about their social status and wealth. This theory plays an important role as objects that were once limited having no change other than their availability, become a less desirable indicator of status. For example, a table in a particular restaurant becoming more easily obtained, therefore losing its positioning power.

The final theory is the culturist approach, whereby consumption "relates an individual to her own self-understanding" (Sanne, 2002:276). In this final level of consumption the self identity is being reflected onto the individual by their consumption. For example, someone who holds values to protect the environment, would therefore chose to eat at a vegetarian café thereby reflecting his/her identity as a person who is concerned about the environment and their health. At this level of consumption material goods are chosen for the messages the individual perceives them to embody. These different viewpoints on consumption are not independent of each other, but operating consecutively. However, the external forces that play upon each decision we make when consuming act as limits to whether we consume just to fill a need or choose so that our self-identity is reflected. For example, I hold values that are against the wages and quality of fast food and would never choose to eat there, especially since their vegetarian options are limited. However when I am travelling by car in the mid-western USA, there are frequently no other options to fulfil my need to eat and I am constrained to the utilitarian level of consumption. Here the power of business on consumer choice can not be neglected. This illustrates that the actors of consumer society are more than individuals but also business and government, which means that the individual consumer is not always at will to choose what she or he want. In the example of fast food, many consumer health groups have exerted their influence and pressure on government and business for these establishments to provide healthier choices. These external factors will be further discussed in the theoretical framework.

The practice of consumption playing different roles can help to explain why even with an awareness of environmental problems people still contribute to its degradation with their consumptive habits. Long after our needs for food, shelter and clothing are met, we continue consuming. Our society has taken our needs to be valued and respected and started expressing them by making sure we have the right clothes on, or are living in the right part of town. The choices we make in our everyday routines have become a way to signal to society just how it is we define ourselves. This problem of consumption is further compounded by consumers "not equating consumption as part of the

environmental crisis" (Connolly, 2003:278). In a study conducted by Connolly and Prothero (2003:280-286) they found three insights into consumers' behaviour:

1. "Environmental concern seen as a recycling and waste problem rather than consumption issue
2. Individuals' lifestyles affect green opinions
3. Many greens are material and buying an image."

This first finding shows that consumers have received messages about consumption, but have interpreted it as waste that is bad, not that they must limit their consumption. This illustrates a very important barrier in sustainable consumption, in the "belief that sustainable consumption means giving up and losing out (Robins & Roberts:1998 as cited in Connolly & Prothero, 2003:282)." This view must be changed and will require immense efforts on the part of government and business to show that individual's needs can be met in a comfortable as well as a sustainable way. For such a long time, the messages to consumers has been to consume more and for this message to change in the cultures it is imbedded in will take efforts and the time similar to that put forth to change consumers perception of smoking.

The second finding shows that the lifestyle a person has plays a part in forming their opinions and thus actions on environmental issues. In other words, individuals were more aware of impacts and threats to environments they interacted with in their life than other environments. In this study they have a fisherman where "his experiences and love of fishing has influenced most of his environmental concerns and any changes he has made to his consumption habits have resulted from this" (Connolly & Prothero, 2003:283). Thus efforts to promote sustainable consumption would have more success if they tied user groups to the environmental issues that stem from their activities. For example targeting recreation bicyclists to commute by bicycle; in this method individuals values are only being modified to include more sustainable attributes, as opposed to trying to teach a whole new set of values that may not be coherent with the individuals lifestyle and self-identity. In the fisherman example the individual expands his identity from fisherman, to protector of the waters (Connolly & Prothereo, 2003).

The third finding effectively shows how even environmental concern can be commoditised to create an identity for oneself. In essence this is saying that for sustainable consumption to fit into the current consumer system, it must be turned into a commodity. That is according to Prothero and Fitchett (2000:50) "The green movement must develop strategies that will effectively commodify the idea that desiring fewer goods and services (no matter how green they appear to be) is a valuable commodity to acquire and be associated with." This shows that to continue with individuals' expression of self-identity, environmental and sustainable consumption issues need to be delivered in the customary packaging, i.e. something that can be bought. This is especially true with younger generations, as they have grown up in a time when consumer culture has become dominant. Klein, (2000 as cited in Connolly & Prothereo ,2003:287) "indicates that youth and twenty something culture does not know any other culture than that of buying {including}….buying his image." These findings taken together illustrate that current efforts to achieve sustainable consumption are not fully succeeding, other than in the

small minority of the population that considers itself 'environmentalist'. This is because these efforts have failed to take into account the many roles consumption has in expressing self-identity.

1.2 Interventions and Previous Research

In efforts to achieve sustainability, Governments and NGO's have stepped in with different behaviour intervention campaigns to try to get people to change their behaviours. These interventions are seeking to coordinate individual behaviour for the collective good. According to Ophuls (as cited in Gardner & Stern, 1996) the four main approaches to behaviour interventions are 1) the use of government laws, regulations and incentives to encourage prosocial behaviour; 2) programs of education, which attempt to encourage prosocial behaviour by giving people information and trying to change their attitudes; 3) the encouragement of prosocial behaviour via certain informal (nongovernmental) social processes that operate in small social groups and communities; and 4) the use of moral, religious, and/or ethical appeals to encourage prosocial behaviour. The most successful behavioural interventions combine these elements, to provide individuals with a pallet of choices to respond to.

One such intervention, "TravelSmart" aimed at reducing car use combines information, personal meetings with the individual and free bus passes (City of Portland, 2004). This is combining elements of approaches one, two and three above. While the results of this method have been good in increasing usage of environmental modes of transport and reducing car use, the target population is only those individuals who respond to the invitation to participate in changing their choices. For example, in the Portland pilot of this method, 59% of the total number of people invited were not participants in the intervention due to lack of interest 33% or already using environmental modes of transport 26% (City of Portland, 2004). Interventions must become good at encouraging all people to change their behaviour, not just those who commit the time to respond. Instead of formatting interventions as which target population is most likely to respond to a particular message, perhaps we should be formatting the message in categories people already respond to.

There has been little focus on how the message that the intervention is designed for can be reformatted to be more successful. In most cases only one dimension of environmental behaviours is targeted by an intervention, such as focusing only on transport, or water conservation (Gardner & Stern, 1996). The message is then designed to fit a certain target population; these studies look into values, demographics and environmental attitudes of this target group to try to make a picture of the person most likely to respond to interventions on the target behaviour (Schultz, Oskamp & Mainieri, 1995.) Further investigations look into the institutional barriers, such as cost or availability, and context of an environmental behaviour to try to provide incentives for people to move to environmentally friendly behaviour (Matthies & Krömker, 2000). Many of these studies base their findings on one aspect for example values and few of the studies have looked at all the factors in designing or evaluation an intervention. However, none of the studies on previous interventions have questioned the categorizing of environmental behaviours. Most behavioural interventions are targeting one of the following: transport choices,

consumption, energy use, water consumption, waste, recycling and activism. These (researchers') dimensions are not necessarily how people are practicing in their habits. A study into energy use will miss the people who are more holistic in their approach and include water conservation in their behaviours. Previous data also show that there are other criteria, such as whether an environmental concern is visible and tangible, such as in the case of organic food, which determine whether people integrate an environmental behaviour into their life.

1.3 Objectives and Aims

The main objectives of this study are to focus on the different patterns of pro-environmental behaviour that are being practiced currently. This study will draw on sociological theories to investigate the internal and external factors that play into the practice of environmental behaviours. An integrative analysis will look into how the different dimensions of pro-environmental behaviour are related and why the transport and mobility sector are often found to be separate from any other pro-environmental behaviour. The aim of this thesis will be to ask:

1. **What dimensions of environmental behaviour are people creating on their own via their present behaviour?**
2. **What are the distinctive characteristics to each dimension of pro-environmental behaviour?**
3. **How might demographic data play a role in determining the different dimensions of behaviour?**

To answer these questions I will employ secondary data analysis taken in 2000-2001 from West Germany. The data comprises of a postal survey of 50 environmental behaviours in the (researchers') categories of: 1. Energy conservation 2. Mobility and transportation, 3. Waste avoidance, 4. Consumerism, Recycling and 5. Vicarious, social behaviours towards conservation (Kaiser & Wilson, 2004). This study will have a limited perspective in that the data comes from the western—as well as Northern European—world and culture. Germany is also the forerunner in environmental awareness and policies, thus the characteristics of green identity is probably more integrated into all lifestyles. In personal respects this survey comes from a geographic locale that I have no previous experience of; thus my conclusions will be more generalized to experiences of western culture than specific space.

1.4 The structure of this thesis

Chapter two will provide the theoretic framework. I will use a theoretical framework to explain the reasoning for such dimensions and the motivations behind them.
Chapter three will look at the method employed for the secondary data analysis.
Chapter four will contain the analysis of the data. Using quantitative analysis to group respondents into behaviour categories will illustrate the different dimensions of pro-environmental behaviour.
Chapter five will provide an analysis and discussion of the results via the theoretical framework, statistical results and comparisons with previous research. I will compare the

results of my analysis with several similar journal studies to determine what aspects of pro-environmental behaviour are contextual and pertain to the geographic population surveyed.

Chapter six will contain the conclusions of the study and a final discussion.

2. Theoretical Framework

To look further into the ways in which people identify themselves in environmental behaviours, I will draw upon a theoretical framework.

> "Environmentally friendly behaviour,.., can be attributed to a variety of underlying factors: ecological commitment, financial considerations (for example when energy saving clearly shown in bills for utilities), infrastructural contexts (for example good or bad access to public transport), cultural habits (for example thriftiness) or simple poverty (for example people cannot afford a car or long-distance holidays). (Brand ,1997:207)"

Previous research has also shown us that there is no one idea of correct ecological behaviour pattern or one distinct group of environmentalists (Brand, 1997). However there still exist distinct behaviour dimensions and the following framework will help to explain the resulting dimensions from the later statistical analysis. The model is revised from various models (Stern, 2000; Thørgersen, 2005; and Kollmuss & Agyeman, 2002) and seeks to present a comprehensive view of the factors in play in individual's decisions to practice environmental behaviours (Figure 1). By investigating both the individual factors as well as factors outside an individual's control a more holistic viewpoint, and thus a more thorough explanation is gained.

I have divided those factors that affect environmental behaviour into two groupings:
1. External factors, which are those things that on their own individuals can do nothing about (Thørgersen, 2005)
2. Individual factors, which encompass those things that individuals can change, or relate only to the individual

In the external factors, the all-encompassing category is the culture as this provides the setting for the society. If we look into the way society is constructed such as the "degree of industrialization, level of affluence, cultural traditions, forms of social differentiation and integration, and political order… influence the ways of life and ways of experiencing reality" (Brand, 1997: 213). These broader conditions lead to different external factors at play for individuals as they experience different policies, political orientations and cultural confines. The society is in turn affected by its level of modernity. This has practical meanings in shaping industrialized nations, organized power structures, and capitalism. Within the culture, its framework of norms sets up a system of social standards and expectations. For example in many societies it is a social norm that children will go to kindergarten. These norms help to shape the societies policies, for example requiring children to go to school until they are 18 and providing a system of free schooling to accomplish this. The broader conditions help to shape the infrastructure, which includes a great many practical things, such as public transport and utility systems,

recycling, eco-labelling schemes, and city layout and planning. Closely related to this is the availability of alternatives, this relates to the possibilities that are available to change behaviour to act environmentally. For example people cannot give up their car to join a car sharing program if one does not exist, the same as choosing to eat organic food, if there is none available in their stores, or if it is such a small market that it is prohibitively expensive.

In investigating the individual factors there are a wide variety of influences. Many previous studies have focused on the role that individual attitudes or concern for the environment play in behaviour choices. However having concern for the environment is not enough to change behaviour, one must also have awareness of what are the behaviours that cause environmental damage and how they can be changed to limit that damage. Habits also can constrain an individual from adopting pro-environmental behaviours who has awareness and concern for the environment, as their established routines are very hard to break. Demographic data such as education, income, and gender have been shown to have varying levels of influence on pro-environmental behaviours. As noted earlier consumption is also used as a tool to reflect one's self-identity, thus this is important to include in individual factors affecting pro-environmental behaviour. The final factor in this group comprises the personal resources an individual has, such as time, competing interests, finances, and access to a car.

I expect that the different behaviours will be affected by different combinations of the factors, and this multi-faceted approach will be the most useful in identifying what are the strongest barriers to practice of a particular pro-environmental behaviour. I have attempted to provide a holistic framework but realize that this is still only an outline of factors. There has been a wealth of good research by psychologists into the individual factors, particularly those concerning values and planned behaviour thus I will not spend much attention on them here. I will also limit the study by not going in depth into every factor; instead the concentration will be on those aspects that will be employed in the data analysis.
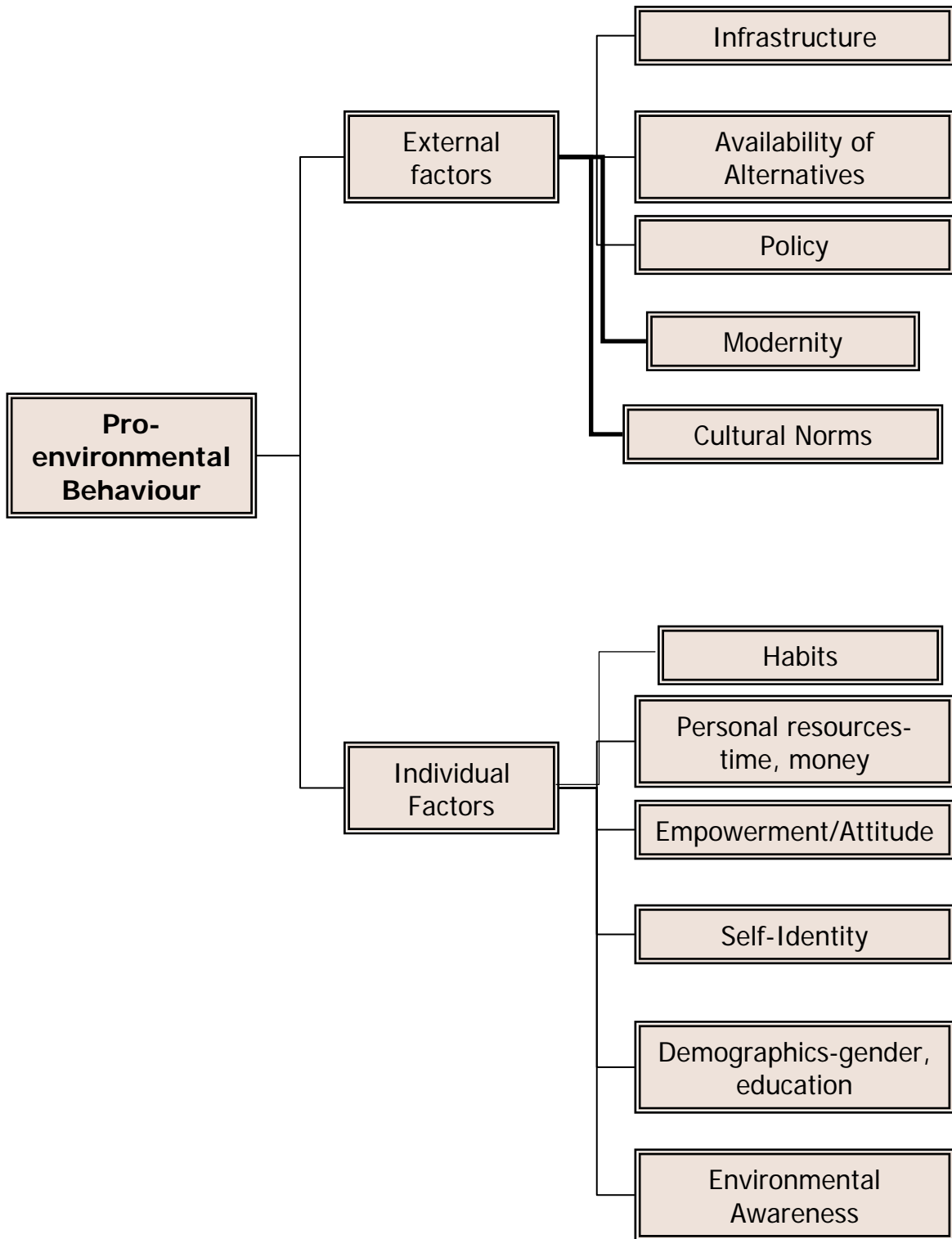
Figure 1: Model of Factors of Environmental Behaviour (adapted from Stern, 2000; Thørgersen, 2005; and Kollmuss & Agyeman, 2002).

2.1 Individual Factors

2.1.1 Habits

One of the hardest things to change is a habit, which has important considerations when looking into environmental behaviours, "as many behaviours with environmental consequences may be well-practised activities of the habitual kind" (Biel, 2003:11). Habits are hard to change for a number or reasons (Biel, 2003):

- They are automatic responses to a goal
- There is little motivation to change them (if its not broke don't fix it)
- Information will not be evaluated about changing habits, unless it becomes relevant, i.e. unless a person's goals have changed to include environmental concerns
- Thus connections between the behaviour and its environmental effects will not be made aware to the person
- Often even with awareness the person requires more information to practice the new behaviour

Habits are a way to meet our everyday needs requiring little effort of thinking. Unfortunately many of these habits are very hard to break and any new behaviour must compete with the comfortable routine of the past behaviour. This is especially a problem when looking into transport issues, as the switch away from a private automobile may change many other associated habits, such as when you get up, if you must wear bicycling clothes, or planning to make sure you know the correct bus routes.

2.1.2 Demographics

Demographics can be used to define characteristics of groups of people who engage in distinct dimensions of environmental behaviours. It has been widely sited (Hines et al. 1987 as sited by Gilig, Barr, & Ford, 2005) that the female, white, well educated, middleclass segment of the population practices the most environmental behaviours followed by the elderly.

This first claim follows Maslow's hierarchy of needs which states that "people can not be thinking about their higher level needs such as social, intellectual, or aesthetic needs until they have satisfied their physiological needs for survival". (Inglehart, 1997: 33). From this idea we might expect that the groupings of behaviour that are related to survival, such as those efforts to save money by water and energy conservation, are to be found in the lower economic demographic and be placed in the same dimension. Those environmental behaviours that save money can be seen as lessening monthly expenditures and therefore contributing to a person's budget for needs beyond survival. In developing countries the environmental concerns for clean air and water are also placed in immediate survival needs.

Inglehart takes Maslow's hierarchy of needs and uses it to formulate his postmaterial theory, which is built upon two hypotheses (Inglehart, 1977:33):

1. "A Scarcity Hypothesis that works much like Maslow's hierarchy of needs, where a person places the greatest subjective value on those things that are in relatively short supply.
2. A Socialization Hypothesis that states that a person's values are created by the conditions that were prevalent during their pre-adult years."

The first hypothesis states that when the lower-order needs of economic and physical security are satisfied, people direct attention to higher-order 'quality of life, or postmaterial needs such as the environment (Carter, 2001). This idea translated into demographics would show that wealthier, educated people in the middle class would be most likely to have environmental behaviours and conversely those in lower economic demographic would be less likely to exhibit environmental behaviours. However Inglehart differs from Maslow in recognizing that economic level does not effectively translate over into postmaterial values. "The postmaterial values are reflecting one's subjective sense of security, not one's economic level (Inglehart, 1997:34)."

The second hypothesis can help to shed some light on this idea and also explain why the elderly demographic is often seen as having the most environmental behaviours. The existing older population grew up in a time when scarcity from wars was prevalent. The values for thrift and reuse have stayed with them into current times. So while they currently have the economic standing to be leading a more consumptive lifestyle, the values imprinted on them in childhood remain. Conversely, the current younger generations have grown up in a time of abundance and will have a hard time changing their consumptive values to conservation (Lindén, 1994).

The gender imbalance can perhaps best be accounted for by looking into the roles of women in the home today. Most environmental behaviours fall into categories of 'work' that are still biased to women: food shopping, running of household, transporting children to work. The question of whether women are engaging in more environmental behaviours than men is often debated in research findings. Many studies point to the role of gender socialization practices to support their findings of women engaging in more support for environmental behaviours and higher levels of environmental concern. (Hunter, Hatch & Johnson, 2004). The specific characteristics of women's gender roles as caregivers and nurturers, with encouragement to be cooperative and display compassion, lend them to extend this care giving mentality to nature and the community as well (Hunter, Hatch & Johnson, 2004). Demographics will be most helpful in this research in helping to clarify what different dimensions of environmental behaviour have in common as it relates to the characteristics of the people that practice them. The findings could show that environmental mobility choices occur as a distinct dimensions of behaviours that has a common demographic of younger, childless persons with lower incomes.

2.1.3 Self-identity

According to Stets and Biga, "one's identity serves as an important motivator for behaviour, because people act in ways to verify their identity meanings" (2003:418). If modern society uses consumption as an expression of identity, it is relevant to look into

the various factors that play a part in identity creation. There is no guidelines to identity and most everything is permissible somewhere. The many changes in modern society have negated the previous generation's choices of lifestyle as options for today. This leads to the realization that one's identity is open to construction and not constrained to any past cultural roles. There is a wealth of lifestyles choices for people to choose from when constructing their identity and none of them are pre-tested as established cultural roles (Pedersen, 2000:196).

People are also usually having multiple sides to their identities, or a hierarchy of identities, such as wife, mother, lawyer, or daughter. This means that those identities that are active the majority of the time will be dominant (Stets & Biga, 2003). So if the identity is most often busy housewife, any needs for that identity, such as convenience or time will take precedence over any environmental identity needs. This hierarchy of identities is also influenced by commitment levels. Defined by Stets and Biga as "the number of people in society to whom one is linked by virtue of identity and the strength of those social ties represent greater commitment to that identity" (2003:420). Thus the role people are most habitually in, even if it is not their strongest calling becomes dominant by nature of association and frequency.

2.2 External Conditions

2.2.1 Reflexive modernity

Modernity takes into account many facets of current society: the industrialized world, capitalism, organized power and the common nation-state. Reflexive modernity looks into the problems inherent in modernity, according to Giddens, "modernity is accompanied by a dynamism that articulates a pace, scope and profoundness of social change (1991:16)". This dynamism has many facets that concern the environment especially in regards to globalism, self-identity, cultural roles and the media. The facets of dynamism contribute to eroding the traditional cultural identities and knowledge. Giddens outlines three aspects of dynamism (1991:20):
1. "The *separation of time and space* whereby people are no longer connected by a locality or place.
2. The *disembedding of social institutions* whereby social relations are lifted out from their local context, or where people are cut off from the effects their choices have(closing the loops). This disembedding has two related mechanisms: 1) Symbolic systems, such as money and 2) expert systems such as those that provide scientific knowledge. These abstract systems work to take many actions out of context by providing interchangeable standards for society to operate on.
3. The concept of *reflexivity* whereby all social systems are constantly undergoing change by new knowledge."

These processes erode many of the opportunities for meaning in life and funnel efforts into a more individualistic, material culture. The first point of dynamism applies to the concept of globalism; people are now not able to see the effects of their choices. For example I buy a chocolate bar and have no idea of the agricultural and factory process that created that chocolate bar. Mostly the chocolate bar comes to represent any messages

that I have received about it from advertising. Often people are seeing many environmental problems as beyond their power to do anything about. Issues such as ozone depletion and carbon dioxide emissions seem better left to politicians than citizens. These feelings affect the individual's sense of empowerment that their decisions will have an effect and thus their motivation to take on environmental behaviours. However it is the nature of these global problems that make it so no one can not be affected by their consequences. "Globalism concerns the intersection of presence and absence, the interlacing of social events and social relations 'at distance' with local contextualities (Giddens,1991:21)." Globalism brings with it awareness of risk, such of nuclear fallout, ozone holes and global warming. This risk serves to break apart traditional notions of predestined courses or fate, now every stage of life is seen as contingent on current events in the world. This can lead to people making their own groupings of environmental behaviours that may combine different aspects of environmental behaviour to belong to one specific facet of the broad category. For instance under environmental we could have car-free people that perhaps are avid bicyclist commuters and also outdoor types that are avid hikers and conservationists of the environment but drive an SUV to their regular hiking trips. These different green lifestyles share similarities in physical activity, but their constructed identities are different. Since the cultural role of environmentalist is not established, it is just as free to be re-constructed by the individual.

With the development of globalism there comes an increasing dependence on abstract institutions. More and more trust in put into the mass media and expert opinions. In a study of five European countries it was found that global change received less than 8% of the total coverage given to environmental issues (Levy-Leboyer, Bonnes, Chase, Ferriera-Marques & Pawlik,1996). Therefore if environmental concerns are rarely portrayed in the media as important and the expert opinions are in conflict with each other, individuals will be unsure as to how strongly they should integrate environmental concerns into their lifestyle or whether there is any need to pay heed to calls to action. Efforts to promote environmental behaviours can also be seen as the outlook of one particular group and not something that should be taken under consideration for the whole of society. For example, in one behaviour change program in the UK, "participants constantly interrogated not only the information in the packs, but also the validity of the institutions and vested interests that these facts represented (Hobson, 2001:195). This attitude displays the larger social mistrust of social institutions such as media and the scientific community. The conflicting attitudes lead some to become radical environmentalists and others to ignore the entire environmental question. Because of the often contradictory reports, people are quite sceptical as to what is the proper action they should take. It is thru this uncertainty in social institutions and the awareness of risk that new social and political movements come into existence. The various NGO's that have come out of the Environmental movement provide multiple outlets for people to identify with other people who are concerned about the same risks as they are. These common interests that bring people together could be a composting and organic gardening group, or an organic food cooperative. Membership in these groups becomes a way to state a shared social identity. These groups are responses to modernity's notion of the way to live. Often these groups deal with "individual choices about how to live a responsible life in the global

society, which, at the same time, are part of the individual's construction of identity and life narrative (Giddens 1990,pp214-231 as cited by Pedersen, 197)."

2.2.2 Infrastructure

The everyday behaviours that we make in life are quite dependent upon infrastructure which include, practical obstacles, institutional barriers and opportunities. For example, perhaps a person is a regular consumer of organic products, but finds that this shopping trip they are unable to make it to their normal store and for convenience buy un-organic products instead. While this person holds an environmental norm of buying organic, the external barrier as to availability of organic food in the store on this occasion has led her to behave differently. Other external factors at play in this decision include the development of an eco-labelling program to identify organic food.

3. Methodology

The method of surveying comes from a school of thought, which seeks to discover and explain patterns and generalizations in populations rather than individual's lives (Buckingham & Saunders, 2004:17). Emile Durkheim is credited with starting this school of thought called 'social facts; in "what social science studies is not individual behaviour, but collective phenomenon" (Buckingham & Saunders, 2004:17). This methodology has similarities to methods used in natural science in that it is seeking to test theory. The main difference is that social scientists use statistics to back their theory, while natural scientists use control groups as proof (May, 1997; Buckingham & Saunders, 2004).

I will be undertaking analytical research using a survey and will be collecting facts on behaviour as well as analyzing these results to determine if there are relationships between them. Since I am looking for patterns in the population a survey is more appropriate than observation or interviews as the latter two would not allow for comparison amongst many individuals. According to Buckingham and Saunders, quantitative survey methods operate on four assumptions. (2004:20-22).

1. "*Phenomenalism*: Facts exist prior to, and independently of, research, and can be discovered by asking questions and recording answers systematically.
2. *Nominalism*: Theories guide the questions we ask, and theories can be tested against the evidence we find, but the facts themselves stand independently of the theories we may hold.
3. *Unity of scientific method*: Survey data consist of responses to questions which can be analysed, in much the same way as observation in any other science are analysed, by means of statistical comparison.
4. *Value freedom*: The collection of facts is distinct from their evaluation, and the survey itself should be unbiased."

These assumptions about survey methods are good in theory but there are some practical contradictions to consider. If we consider the first three assumptions we must take into account that all facts are subject to interpretation. In the case of surveys, this starts with the design in which the researcher chooses what questions to ask on the presupposition as to what the important questions are. The facts are then further constrained by the respondents interpretation of Likert-type scales; one individual's 'always' could be answered by another individual as 'often'. Respondents are also stuck

in standardized answers and cannot challenge the questions posed to them. The final problem with these two assumptions is that what people report they do is often different from what they actually do (May, 1997). In using a survey designed by another researcher for a different purpose, I am hoping to eliminate some of these above mentioned issues with survey design. Since I have not decided upon the important questions to ask, this survey saves time and should provide data with less bias. If we look into the fourth assumption it has been questioned that the funding for research has led to survey bias. Since I am doing secondary data analysis my research has not been biased by the requirements of the original funding organization. In using surveys as a method it is crucial to remember that relationships shown are not causal, but show association and relationships. The theoretical framework is necessary to be used alongside the analysis to provide meaning to the results.

3.1 Survey design

Data was collected by means of a self-completed questionnaire asking respondents about 50 pro-environmental behaviours. 32 of these were five point questions on a Likert scale. For the Likert scales, the number 1 was assigned to "never", 2 to "seldom", 3 to "sometimes", 4 to "often", and 5 to "always". The remaining 18 questions were yes/no questions with the number 1 assigned to "no" and 2 assigned to "yes". Demographic data concerning age, education, city size, number of adults and children in household and responsibility for household work, was also collected.

The content of the survey asks questions of pro-environmental behaviours in five categories.
- 11 questions on energy conservation
- 12 questions on transport and mobility
- 9 questions on waste and recycling
- 9 questions on green consumption
- 8 questions on social behaviours toward the environment

These data will draw on the General Measure of Ecological Behaviour (GEB) survey. The items on this measure have been used in numerous publications as well as in multiple countries. It has been shown to be a reliable measure of pro-environmental behaviours (Kaiser, Doka, Hofstetter, & Ranney, M., 2003; Kaiser, & Wilson, 2000; Kaiser, & Biel, 2000). The GEB survey has classical internal consistency indicators from $\alpha = .72$ to $\alpha = .88$ (Kaiser & Wilson, 2004). This positive side to using another researcher's survey is the large amount of respondents, as well as saving time by not attempting to 're-invent the wheel'. Problems with this dataset include its age, as many factors have changed in terms of new technologies, policies and awareness in the 5-6 years since the survey was completed. Also with the design of the survey not being longitudinal, there is no way to continue this research and monitor the changes over time as external factors mentioned above change.

3.2 Data source

This dataset graciously comes from researcher, Florian Kaiser who created and has published many studies with the GEB survey. The analysis is completely my own. This paper will use secondary data analysis from survey data that derives from research supported by grant TH-15/99-1 from the Swiss Federal Institute of Technology at Zürich, Zürich, Switzerland. By utilizing secondary data I am able to gain access to large number of respondents. The sample was taken in 2000 and 2001, from the Bochum area in Western Germany which has a population of 394,636 (City of Bochum, 2005). The questions were translated to English by two native speakers and then compared to existing English versions of the survey for accuracy.

3.3 Participants

Respondents were selected from resident registers of seven different communities in the Bochum area with different numbers of inhabitants. Of the 5894 randomly selected persons, 607 persons sent the completed questionnaire back for a response rate of 10.3%. According to Klöckner and Matthies, "Bochum is situated in the Ruhr District… which is a congested urban area with a relatively good network of public transportation (2004:323)." The Bochum area is a conglomeration of cities in the restructured Ruhr area that is quite industrialized, however the city still boasts that 40% of its area is made up of green spaces (City of Bochum, 2005). To provide further information on Bochum's population is a moot point as this survey is not representative of the people who live there. This sample is made up of a majority of 2 adult households (57%) with 3 adult (19%) and 1 adult (16%) as the next common. Most households in this survey had no children (68%) and one child (18%) followed by 2 children (10%). The sex for this survey is quite evenly split with 48% men and 52% women. 70% of respondents indicated that they were responsible for household work while 30% indicated another was responsible for household work. For ease of this analysis, I have made generational age categories (Figure 2). The majority of the sample draws from the older age groups with 46-64 (38%) followed closely by 65+ (31%). The mean age is 54.4. The education level for this survey has about 45% with compulsory level of schooling, followed by 30% with high school level and 25% with university education. The majority 62% of respondents live in a medium sized city (between 10,000-100,000 inhabitants), with 20% in small towns (less than 10,000 inhabitants) and 18% in larger cities (more than 100,000 inhabitants).

Sample Age Distribution
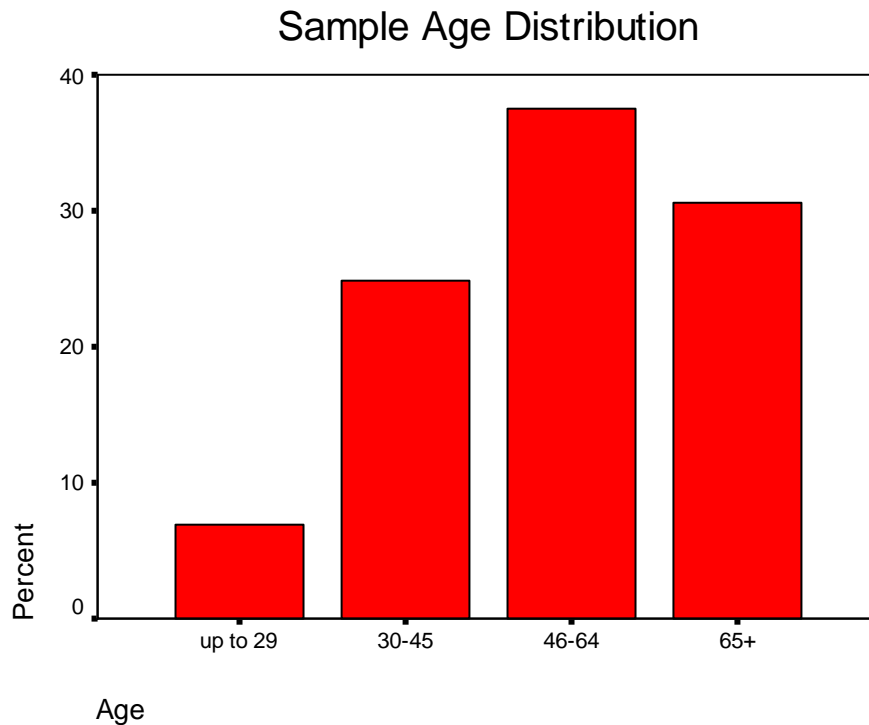
Figure 2 Age distribution of sample by generational categories

From these characteristics it is quite clear that this sample is not representative of the whole population. This survey shows a more accurate picture of the behaviours of older couples who have no children or whose children have already left home or are considered adults living with their parents. Individuals in this life phase would be expected to be quite settled into life and their routines and perhaps not so open to practicing and developing new environmental behaviours. This research will be based on a perspective that does not include specific information about the experiences of "life in Bochum" but will instead compare with experiences of life in western countries.

3.4 Drop-outs

Given the relatively low response rate, participants cannot be regarded as representative of the country or the communities in which they live. However, the number of respondents does allow a picture of different dimensions of environmental behaviour to emerge. According to Buckingham and Saunders (2004: 70) the low response rate to the survey can be interpreted in three ways:

- "Non-contacts: people who have moved or are away and never actually receive the survey to complete
- Refusals: people who do not want to participate in the survey
- Non-completed: people who do not successfully complete the survey for some reason"

For this study the second group of refusals can potentially hold the strongest problem as those persons that chose not to respond are most likely a segment of the population that will not be represented in the dimensions of environmental behaviour.

3.5 Statistics

The collected data were treated by means of analysis of frequency to check the distribution of individual variables, reliability analysis (Cronbach's alpha) to produce the most accurate indices possible, factor analysis to identify the different dimensions, and one and two-way ANOVAs to indicate with demographical differences were relevant for the indices. All analyses were made by SPSS version 11.5 (SPSS Inc., 2001). The Level of significance was set to p=.05.

4. Results

4.1 Dimensions of pro-environmental behaviours

Analysis of the underlying dimensions of pro-environmental behaviours that were being practiced by respondents was investigated by factor analysis on the 32 five point response items on pro-environmental behaviours. Distribution of these items was first checked by frequency analysis resulting in two items removed. These two items were: "I bring empty bottles to a recycling bin", and "I collect and recycle used paper." (>90% always practiced these)

An initial explanatory factor analysis with varimax rotation yielded 10 factors, with the majority of factors having only one or two items with high loadings. Therefore different solutions with a restricted number of factors were computed. In all of them three stable factors appeared. The five factor solution was therefore chosen to keep maximum data in the analysis, with no change in the first 3 stable factors. This solution explained 40% of the variance and had a KMO value of .728. (Table 1)

Table 1 Result of Factor Analysis with 30 items (Varimax Rotations, loadings <.40 not given)

Items	Factor				
	1	2	3	4	5
I ride a bicycle or take public transportation to work or school.			.802		
I buy organic food	.588				
I prefer to shower rather than to take a bath					-.645
I buy beverages in cans				.654	
I use an oven cleaning spray to clean my oven		.568			
I wait until I have a full load before doing my laundry		.491			
I drive my car in or into the city			.814		
In the winter, I leave the windows open for long periods of time to let in fresh air				.427	
I wash dirty clothes without pre-washing		.555			
I drive on freeways at speeds under 100kph				.418	
If I am offered a plastic bag in a store, I take it		.478			
In nearby areas (around 30km), I use public transportation or ride a bike.			.747		
I have pointed out unecological behaviour to someone	.416				
I contribute financially to environmental organizations	.480				
I buy milk in returnable bottles	.534				
I buy bleached and colored toilet paper					.471
I buy convenience foods				.412	
I buy products in refillable packages	.465				
I buy domestically grown wooden furniture.		.543			
I boycott companies with an unecological background	.605				
I buy seasonal produce.	.432				
I use a clothes dryer					.503
I read about environmental issues.	.691				
I talk with friends about problems related to the environment.	.688				
I keep the engine running while waiting in front of a railway crossing or in a traffic jam				.436	
At red traffic lights, I keep the engine running	.467				
I kill insects with a chemical insecticide		.532			
I drive to where I want to start my hikes		.428			
Explained Variance	11%	9%	8%	6.7%	5%

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 20 iterations. *Items in italics* indicate negatively formulated behaviours; they are recoded and should be read as " I refrain from…"

From this table, three stable factors emerge and indices were computed on the first three factors for all items with loadings >.40. The computation was done by adding all items on the factor and then dividing by the total number of items on the factor. Items that loaded

on two factors were included only on the factor with the higher loading. Factors 4 and 5 were rest factors and containing items without theoretical relevance and only a few items with high loadings. Table 2 shows the variables included in the three indices.

Table 2 Environmental Behaviour Indices with descriptive data by variable

Factor	Variables included	N	Mean	Median	SD
Concerned Consumers	I read about environmental issues.	592	2.4	2	.95
	I talk with friends about problems related to the environment.	598	3	3	.81
	I boycott companies with an unecological background.	497	3.4	4	1.22
	I buy organic food	585	2.7	3	1.01
	At red traffic lights, I keep the engine running	564	2.2	2	1.20
	I have pointed out unecological behaviour to someone	583	3.1	3	1.08
	I buy fruits and vegetables in season.	592	4	4	.88
	I contribute financially to environmental organisations	592	1.9	2	1.06
	I buy milk in returnable bottles	560	2.1	2	1.22
	I buy products in refillable packages	592	3.7	4	.83
Healthy Home	*I use an oven cleaning spray to clean my oven*	540	4.1	4	1.11
	I kill insects with a chemical insecticide	588	4	4	1.04
	I buy domestically grown wooden furniture	437	3.5	4	1.10
	I wash dirty clothes without pre-washing	528	4	5	1.22
	I drive to where I want to start my hikes	564	3.3	3	1.05
	If I am offered a plastic bag in a store, I take it	601	3.1	3	1.12
	I wait until I have a full load before doing my laundry	550	4.6	5	.69
Mobility	*I drive my car in or into the city.*	567	2.5	2	1.22
	I ride a bicycle or take public transportation to work or school.	491	2.8	3	1.61
	In nearby areas (around 30km) I use public transportation or ride a bike.	591	2.4	2	1.24

Items in italics indicate negatively formulated behaviours; they are recoded and should be read as " I refrain from…"

Factor 1 may be interpreted as green consumptive behaviours as well as educational activities. Factor 2 concerns home decisions that consider thrift and efficiency, while

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factor 3 concerns transportation choices. Table 3 shows the distribution of the three indices. The first three factors were tested for reliability analysis as shown in the table below. The alpha if item deleted function was employed in attempt to further purify the indices but exclusion of any item would not improve Cronbach's Alpha.

Table 3 Environmental Behaviour Indices

	N	Mean	Median	Std. Deviation	Minimum/Maximum	Cronbach's Alpha
Concerned Consumer	414	2.87	2.80	.596	1/4	.77
Healthy Home	356	3.85	4.00	.579	1/5	.63
Mobility	464	2.52	2.33	1.140	1/5	.80

4.2 Hypothesis of Demographic Characteristics

With theses three indices in hand, it is now possible to make hypotheses about their relationships with available demographic data. The following section will give hypotheses for each factor, followed by the statistical results.

4.2.1 Hypotheses of Demographic Characteristics for Concerned Consumers Factor

The concerned consumer factor has many variables that fall under the confines of household work. As the majority of these activities are most often relegated to women, I would expect this dimension to show a higher prevalence of women with responsibility for the household work. For such an integrated understanding of environmental problems and activism behaviours, I would also expect higher levels of education. For this factor I hypothesize:
1. those scoring high in this factor will be women
2. Those scoring high in this factor will be responsible for household work.
3. Those scoring high in this factor will be highly educated

4.2.2 Hypotheses of Demographic Characteristics for Healthy Home Factor

Demographically, I would expect the healthy home factor to be more likely to be practiced by those who are responsible for the household, with another correlation to females, as this most often is their responsibility. In the age category, it is often mentioned that the elderly, generations having grown up in times of shortages, retain their values of thrift and I would expect this to be reflected with the older age categories to be more likely to practice these behaviours. For this factor I hypothesize:
1. those scoring high in this factor will be women
2. Those scoring high in this factor will be responsible for household work
3. Those scoring high in this factor will be from older age groups

4.2.3 Hypotheses of Demographic Characteristics for Mobility Factor

Demographically, there is some interest in the role that gender and education play in the mobility factor, with the argument that women base their activities closer around home and thus are driving less, and that increased education will give a better awareness of the complexities of transportation's environmental costs. Two variables that are not included in this survey, but could also play an important role, are income and life phase. There are many students, for example that do not drive because they have such a low income, and are not needing to commute to work and thus can use alternative transportation. Another group that could be investigated in life phase is the elderly who perhaps can not afford the upkeep of a car on their pensions or are prevented from driving in their age. Both of these groups have practical reasons for not driving, which do not relate to any environmental concern, but rather demographic factors. For this factor I hypothesize:

1. Those scoring high on this factor will be from larger cities

4.3 Results of Demographic Characteristics

The above hypotheses were tested by an analysis of variance of means on each of the factors with the available demographic data.(Table 4) For the first factor, concerned consumers, analysis showed that both sex and responsibility for household work were significant (sex: $F(1,412)=8,865$, $p=.003$; household work: $F(1,411)=19.537$, $p=.000$). To clarify whether this relationship was from each variable independently, or from the significance gender has on responsibility for household work, a two way ANOVA was calculated which clearly shows that it is responsibility for household work that is a significant predictor of the concerned consumer factor (sex: n.s.; household work: $F(1,412)=8.12$, $p=.005$; sex*household work: n.s. (Figure 3).
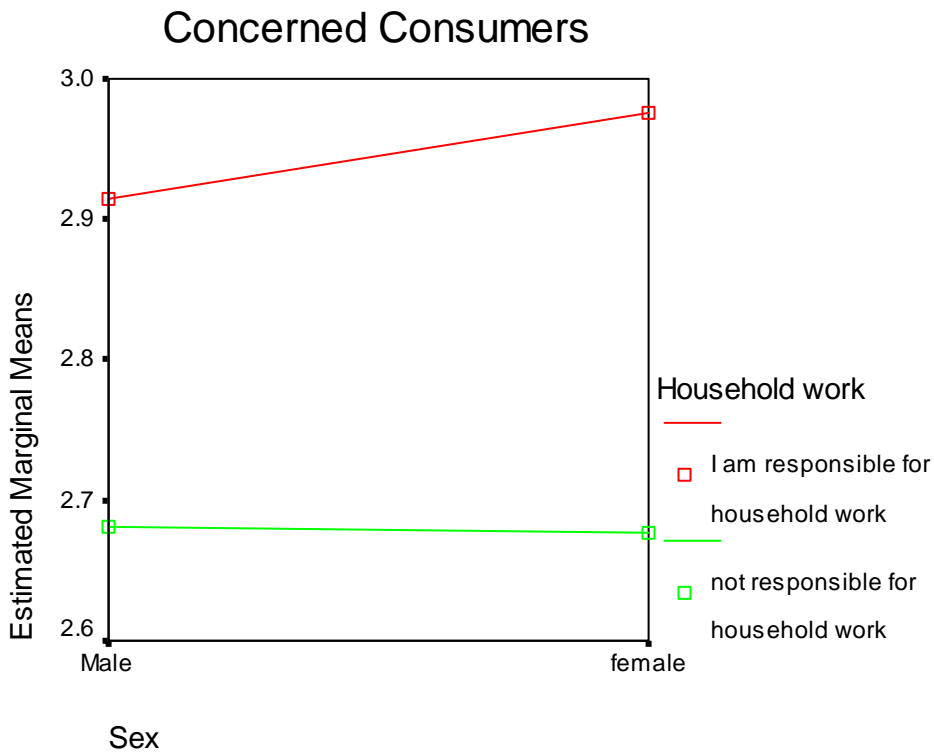
Figure 3 Concerned Consumers (gender*household work)

The final relationship for this factor was found in age, with the oldest segment of the population being the least likely to behave environmentally $F(3,410)=8.706$, $p = .000$.

Looking into the Healthy Home factor, analysis of variance showed that both sex and responsibility for household work were significant (sex: $F(1,353)=25.122$, $p=.000$; household work: $F(1,353)=14.357$, $p=.000$). Because of the significance of female gender on responsibility for household work it was necessary to look into this relationship further. A two-way ANOVA was calculated. As shown below, gender is the significant predictor of this factor (sex: $F(1,353)=4.707$, $p= .031$; household work: n.s.; sex*household work: n.s.(Figure 4).
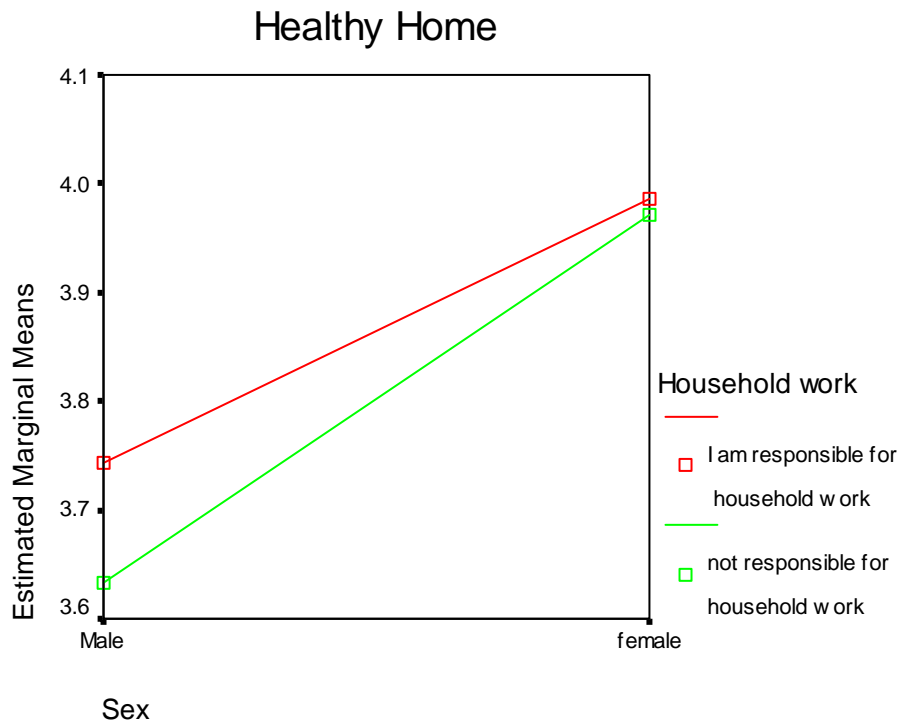
Figure 4 Healthy home (gender*household work)

For the mobility factor, the size of the city had a relationship with environmental mobility choices with the larger the city, the higher the mean score (F(2,457)=18.596, p=.000).

Table 4 Results of ANOVA analysis

	Concerned Consumer	Healthy Home	Mobility
Sex Mean males Mean females	2.78 2.96 F(1,412)=8,865, p=.003	3.69 3.99 F(1,353)=25.122, p=.000	2.49 2.55 n.s.
Responsible for Household Work Mean **Not Responsible Mean**	2.96 2.68 F(1,411)=19.537, p=.000	3.91 3.65 F(1,353)=14.357, p=.000	2.55 2.46 n.s.
Age Mean up to 29: Mean 30-45: Mean 46-64: Mean 65+:	3.22 2.97 2.92 2.67 F(3,410)=8.706, p = .000	3.77 3.80 3.90 3.81 n.s.	2.94 2.58 2.37 2.64 n.s.
Education Mean compulsory Mean high school Mean university	2.93 2.81 2.82 n.s.	3.82 3.84 3.91 n.s.	2.43 2.68 2.48 n.s.
City Size Mean large city Mean medium city Mean town	2.80 2.86 2.94 n.s.	3.99 3.81 3.89 n.s.	3.03 2.55 1.97 F(2,457)=18.596, p=.000

5. Analysis and Discussion

This section will contain the analysis of the three indices, first applying the relevant aspects of the earlier proposed theoretical framework. This theory will then be partially tested by looking into the results of this study. Finally findings from previous studies are analysed and compared in an effort to provide the most complete picture possible of the factors at play for these indices. By applying the theory to both my results and previous empirical studies, the analysis will gain more depth into the factors that affect the adoption of these pro-environmental behaviours.

5.1 The Concerned Consumer factor

5.1.1 Analysis of Concerned Consumer Factor

The first factor concerns green consumer behaviours that are motivated by concerns for health, waste and local production in the products they buy. Against the majority of these behaviours dependent on consumption and money, it also shows non consumptive behaviours of education and discussion of environmental issues. It is interesting to note this mix of both green consumerism and involvement in environmental issues. I suspect that this mix of behaviours is the result of campaigns by NGO's and government to reach sustainable development goals. With information as to what are the better choices to make for the environment, this factor shows pro-environmental behaviours that are easily integrated into established infrastructure and lifestyles.

This is not to say that a number of external factors are not necessary to make this integration smoother. Programs for eco-labelling, as well as availability of these products are crucial for this behaviour. This requires cooperation from both industries to supply these products as well as government to establish a trusted criterion for eco-labelling. In this respect eco-labelled products are acting as another abstract system in modernity. Ecolabels provide a stamp that tells consumers that what they are buying is better environmentally than the other choices. However each country's labelling scheme is different and not all consumers may know what the differences are, or which labels are certified by independent parties. There are also issues of cost for producers, where the fees associated with having their product labeled are a deterrent to them, thus their product which is eligible for an eco-label and thus a green purchase, is not identified to the consumer. Another clear need is for access to environmental journals and reporting. For this factor to be present the culture must allow an arena for environmental issues to be discussed and presented. There must also be a wide array of choices and opportunities for substitutions so that individuals can chose to boycott unecological companies and products.

If we investigate this factor according to the theory of modernity we find that these behaviours are attempting to work against the separation of time and space. These choices show that an individual is taking responsibility for knowing the effects of where her/his products are coming from (organic food) as well as seeking to alleviate the waste effects of packaging. In making these choices she/he is taking action to know the effects of their choices. Perhaps their previous method was based on the abstract system of money; choosing to buy the cheaper product. This is a second way in which this factor goes against the dynamism of modernity, in that individuals have chosen to no longer operate with only abstract systems in mind. The appearance of choices in organic food definitely reflects the ways in which institutions can be changed by new knowledge. The variables pertaining to education and discussion fit alongside the concepts of dynamism discussed earlier. The separation of time and space is represented by the multitude of complex environmental problems; these individuals take it upon themselves to cut thru the disembedding of social systems by taking on educating themselves on these complex problems and in turn further halt this process of abstract systems by educating others.

With this new knowledge they seek to use reflexivity and change the current situation thru boycotting those companies that they see as a cause of environmental problems.

The two variables of education and discussion illuminate another dimension of this factor and that is of self-identity. The behaviours on this factor are all quite active requiring effort and thought towards breaking established habits of the individual performing them. This shows that they have environmental values as well as awareness of the environmental choices to make. These individuals are quite strongly identifying themselves as environmental by working to stay informed of current environmental issues and then discussing them with friends. This shows that these individuals are seeking out opportunities to identify themselves to other people as environmental and perhaps are members of environmental organizations. Especially as most often boycott actions are spurred on by environmental NGO's as a way to gain attention of government and business for lack of attention to environmental issues. This group has personalized environmental issues even further by seeing the necessity for them to take action against companies that are behaving unecologically. These individuals have a sense of personal empowerment and are thus not afraid to educate themselves as to what is happening and share that knowledge with others. At the individual level a person must be somewhat extroverted to talk to others about environmental issues. It can be expected that there is a large subculture that these individuals belong to that both supports their consumption decisions and needs for information while providing a forum to exchange ideas with others.

5.1.2 Study Results of Concerned Consumer Factor

As shown by the results earlier, responsibility for household work was the greater predictor of this factor. This follows that those who are doing these activities to maintain the household will continue doing them. This study shows that for shopping decisions the gender divide is split more evenly, with males also taking the duties of shopping. The lack of significance in levels of education can be due to the self-education efforts that are included in this factor.. Thus knowledge of the people is more appropriate than academic knowledge as much of the information about these purchases can stem from marketing sources. The final result of significance of age reflect the socialization theory of post modernism; that those older generations grew up when everything they could purchase was fine, thus the new information that certain choices have negative environmental repercussions, is not attended to in their consumptive habits.

There are some limitations to this research as it pertains to survey design. There is no available measure of values that respondents hold, which could be useful in determining distinctions in motivations and feelings of empowerment to environmental issues. It would also be useful to survey the external structural conditions that respondents have, such as availability of ecolabeled products stores, type of store they shop at, and recent government campaigns. With these limitations in mind, the analysis will continue by looking at previous research into similar behaviours.

5.1.3 Comparison of study results with previous research into Concerned Consumers

This factor is found in similar studies. The most common component, buying organic food will first be used to compare this research with other studies. If we compare these results to a similar study by Gilig et al in 2002 in Devon, UK, they found low support for activity in all cases, with less than 5% of their sample always purchasing organic foods and 20% occasionally purchasing organic foods (2005:487). Their study also found that this lack of purchasing of organic food was in the context where there were many stores that could have afforded individuals the opportunity to choose organic (Gilig et al, 2005). This illustrates how difficult it is to change habits to environmental behaviour, even when the choice is available. There is also another similarity found with age, in that the Gilig study found those most committed to a similar purchase decision factor to have a mean age of 55. The Gilig study also had a survey that included values in their questionnaire. Their research found that the values held by the environmental groups were characterized by more collective ideas of unity and altruism, alongside belief that environmental problems are not just government's responsibility and trusting the information that environmental groups provide (Gilig et al. 2005). This gives an insight into the differences in individuals that are practicing this environmental behaviour. As mentioned earlier, to improve the data in this research it would be worthwhile to include value questions as well as to know the availability of organic foods and other environmental purchases in the area. Another important consideration is to know what current government campaigns are operating in this area to influence individuals and educate them about their choices. In the Gilig study buying organic produce and locally produced goods had been a recent message given to consumers. This relates to the context of the decision and it is interesting to see in their results that perhaps the recent campaigns were enough to raise the occasional purchases of organic food, but not change the regular habit of purchases. This shows that an individual's values and how they express them in their purchase of organic food is harder to change then with just information alone. Other reasons that could contribute to the low levels could be individuals' resources such as higher price of organic foods and habit. However the different values held by this dimension seem to point more to a concept of self identity, that these individuals are expressing their values through their purchases.

In a Danish study by Pedersen in 1996 respondents were asked about how often they purchased organic milk, vegetables and meat. The percentage that did behave in this way was 10% (Pedersen, 202:2000). This study found that individuals purchasing organic food were better educated, and across all income groups, even thou higher price was found to be a deterrent in consuming organic food (Pederson ,2002). This is an interesting relationship in that while price does have an effect on the purchase of organic food it is more education that is a decisive factor. Possible reasons for this could be a high percentage of students in the sample which would be highly educated but having low incomes. The strength of education on this factor could possibly be in that it forces people to re-evaluate their habits and challenges the popular misconception that a friendly farmer is providing their food, instead of a large corporate factory farm. This study also found that consumption of organic food was connected with the availability of this choice in major retailers in Denmark (Pederson, 2002). The effect was to provide a large increase in consumption of organic food in the start of its availability in major retailers.

This could be due to these new products as seen as a fad to try, or just allowing the people whose values already demanded organic food to fulfil their want for organic produce. Thus this original surge in sales could only be due to those people finally being able to express their established self-identity, not from new individuals trying organic food. The final finding was that purchasers of organic food were also active in discussing environmental issues (Pederson, 2000). This fact reflects back on the social context of environmental issues, if they are presented in media, education and in homes as something to be considered important. This study finds support for the theory presented earlier on context of environmental decisions, both in terms of social dialogue around the issue and physical availability of organic products. At the same time with such a small minority of the population purchasing organic food, it seems evident that it is not only context that decides if a person will buy organic food, but also an expression of their values and identity.

In a third study of Swiss consumers in 1996 three factors were found of importance in consumers decisions to buy green: 1) positive attitudes towards environmental protection and local production 2) time barriers can restrain motivation to buy green 3) action related knowledge (Tanner& Kast, 893:2003). The breadth of this study can help to point out the roles that context play both within an individual and external to them. It shows once again that the individuals that consume organic food are reflecting their values and thus using their consumption as a way to signal their self-identity. The second finding points to an external barrier to consumption of organic food, in that when people were short on time they reverted back to buying conventional food. Thus the behaviour to buy organic food is still constrained by time causing a tendency to revert back to earlier habits. The final knowledge component entails that a consumer can distinguish between environmental choices and those that are not. In this category a trusted labelling scheme either sponsored by the government or third-party certified can help consumers identify acceptable products. Perhaps the most interesting finding in this study is that price is not a crucial factor in the decision to purchase organic food (Tanner & Kast, 2003).

From these studies we can conclude that the choice to purchase environmental goods is still practiced by a small minority of the population. This minority tends to be well educated and is not dependent on age or wealth. Those responsible for the household work, which includes shopping, are more likely to be the one's practicing these pro-environmental behaviours. The availability of organic foods in markets is an important consideration, but does not provide enough incentive on its own for consumers to choose organic. From the results presented it shows that individuals that choose to purchase environmental goods have different values and have a self-identity that includes concern for the environment versus those who do not purchase environmental goods. The social context of the issue of shopping for environmental goods, both from media and government information campaigns can also be included as a factor in individual's decision to re-evaluate their shopping habits which can result in a change to organic purchases. This decision is still a new habit and external constraints such as time or availability can cause individuals to stray from consuming organic food.

5.2 The Healthy Home Factor

5.2.1 Analysis of Healthy Home Factor

This second factor concerns environmental habitual actions that are based around the home. There is a combination of both actions to be more efficient as well as limit the use of harsh chemicals in the household. This factor is quite similar to the previous, only it is less based in consumption and more about making choices that are better environmentally. These actions are relatively simple to practice and are probably everyday habits of the individual.

The external conditions that are important in this factor probably relate firstly to the cultural norms. In this case it is perhaps seen as common sense to use only what is needed in getting the laundry clean, or taking a bag in a shop. The desire to stay away from chemicals in the home is probably a result of both chemical labelling and awareness campaigns by media, government or NGO. There must of course then be environmental alternatives to these products for individuals to use. Other external conditions that could have a role in determining this factor include charges for bags in stores acting as a disincentive to take a bag.

On the individual level, values of thrift, as a part of self-identity come thru with these habits of efficiency. These behaviours are probably cheaper economically than their alternatives. These pro-environmental behaviours are mostly easily practiced common sense. These individuals value health and a simple lifestyle. They are staying away from chemicals in their home perhaps because they don't believe they need them, or because health in their home is important. In this factor it is quite clear that a look into the individual's values would be helpful in seeing the distinction between the first two factors. These actions are introverted, being based in the realm of the home and do not require much intervention on the behalf of external factors. Most likely these are learned behaviours gained in individual's upbringing. These behaviours also reflect planning in that individuals think about what they need to use to accomplish their goal.

5.2.2 Study Results of Healthy Home Factor

From the earlier results, the only significant predictor of this factor was gender, with females being more likely to behave environmentally. This shows that even with a more equal split in care of the household, cleaning duties and health concerns are more regulated to women. The lack of significance for age differences can be seen as an indicator that many of these behaviours are practiced as more habitual 'common sense' than generational values of thrift.

There are also limitations in the analysis of this factor. With no follow up questions as regards to availability of green space, economic, habit or value considerations, it is harder to create distinctions in this dimension. It would also be useful to know if there were any recent campaigns that have targeted water efficiency, and chemical use in households.

5.2.3. Comparison of study results with previous research into Healthy Home factor

The low alpha value of .63 on the healthy home factor shows that this factor is currently a less reliable indicator and would require further refinement for use in additional studies. I have included this factor in analysis because of its higher percentage of variance explained and because the distinction of this factor as decisions that are based around the home makes sense theoretically. With these limitations in mind, the comparison of these results with previous studies is limited, as this factor is not a strong indicator and therefore not often identified in previous research. A similar factor was found in a study by Gilig et al (2005) that used a similar methodological approach to find factors of 'purchase decisions', 'habitual activities within the home' and 'recycling behaviour'. Unfortunately the authors of this study were only interested in their first factor, and did not perform analysis on the 'habitual activities within the home' factor. A second study by De Young (2000) also found 'frugality' as a motive for environmentally responsible behaviour. Thus while this factor does appear in other studies, further analysis has not been undertaken.

5.3 The Mobility Factor

5.3.1 Analysis of Mobility Factor

The third factor concerns mobility choices with an emphasis on using public transportation and bicycling. This separate dimensioning is evident in the high loadings this factor has as well as its high reliability shown by its alpha value, meaning that these behaviours are quite distinct from the other pro-environmental behaviours in the survey. This points to how hard these behaviours are to change to be sustainable. This is shown by respondents in the first factor being educated on environmental issues, but choosing to connect that information only to their purchases and not their transportation. For transportation behaviours to change they require a true revaluation and change in current lifestyle practices.

There are many external factors at play in this factor. The current practices of development have the private automobile as a key for transport. Public planning that separates housing from any services thus requires that people have motorized transport to meet their daily needs. The current system of pricing for fuel and roads also does not adequately reflect the costs to the environment from automobile use, thus acting as an incentive to continue driving. The lack of reliable public transport or a safe network of bike lanes is also an important factor, as well as secure facilities to park bikes and showering facilities at workplaces for those who choose to commute by bicycle.

This factor is also plagued with conflicts of modernity in that there are conflicting messages in the culture; from one branch, for example scientists saying that car use is detrimental and another branch, media advertisements encouraging individuals to buy bigger cars with higher environmental impacts. With these conflicting messages most individuals choose to continue with the status quo. The effects of dynamism are that a separation of time and space are quite tangible. People are spending longer amounts of time travelling on a daily basis to get to their destinations thus necessitating a need for

mobility with the least additional cost of time. The practice of transport also has a disembedding role, whereby the effects of driving a car are not tangible; individuals cannot see their single effects to global warming. Thus they are separated from the effects their actions have. This is further compounded by the fact that it is the collective effect of individuals driving that has the visible effect, not the lone individual.

For most individuals mobility choices are based on convenience, time and habit. Because of this population having grown up with the prevalent message that private automobiles were fine, it may be harder for them to think about their now habitual mobility choices and re-evaluate them. The mobility choice says more about an individual's status level than their environmental concern, as cars continue to be seen as symbols of power, freedom and status level (Polk, 2003). Therefore the choices for transportation are motivated more as a way to show self-identity and social status. Because of this the rewards for environmental mobility choices come as a collective good from an individual loss. From this we would expect that most people having high scores on this factor would be quite altruistic and putting the needs of the collective above their personal desires. The resources a person have also play a part in mobility decisions such as having a car or economic resources to afford mobility options. In many cultures, owning a car or knowing how to drive is seen as a basic point in life; such as finishing school or having a job. If you don't have this you should, or something is wrong with you and you haven't 'made it' yet. In this way driving a car has become much more than personal mobility, it has become a necessary accessory in our culture. Those who do not seek to drive must therefore have a very strong self-identity that goes against many cultural norms. They must also be quite passionate about their values to re-arrange their lifestyle to fit into a culture that is designed with private cars in mind.

5.3.2 Study Results of Mobility Factor

From the results of this study it was found that structural concerns have the significant effect on mobility decisions. There was a higher score on environmental mobility choices from those respondents from large cities. This illustrates that the increased resources, via bus lines, train systems, and denser planning practices, are more important for determining this factor than any demographic concerns, as no significance was found for any of the available demographic data. Follow up questions to this survey could have examined the planning of the area by asking respondents how near their homes are to services such as grocery stores, or transit stations. These questions as well as investigations into values and perceptions about transportation options would help to distinguish this dimension further. With these limitations in mind, the analysis will continue by looking at previous research into similar behaviours.

5.3.3 Comparison of study results with previous research into Mobility

In previous research by Anable, she found that, by using a similar method of factor analysis to group visitors to natural areas in the UK, there emerge different dimensions based upon values and attitudes they held, such as attachment to cars and willingness to use alternative transport methods (2005). These dimensions were then further broken

down to six groups based upon car ownership. For demographic information she found differences only in education, with the highest levels of education belonging to those owning a car and actively trying to use it less and those who are most complacent to driving a car having less education (Anable, 2005.) On the whole she found "that personal characteristics are not an important determinant of attitudes or any differences in behaviour found between segments of equivalent vehicle availability" (Anable, 2005:71). Her research further showed that even those dimensions with similar norms and attitudes could behave differently based on their feelings of empowerment (Anable, 2005). These findings lend support for the micro/macro level theory that shows that it is not the demographic characterization that should be targeted in designing policies and campaigns but the different beliefs and practical barriers that motivate people to behave in different ways and distinguish target groups.

However in contrast to above, there does exist a large body of research into demographics with the role of gender and transportation. In a study by Kanyama, Lindén and Thelander, they found five factors to explain their findings that men travelled longer distances and used less public transportation than women:
1. share in driving licenses
2. access to a car
3. income level and owning a car
4. geographic location of workplace
5. location of leisure activities outside the home (1999).
It is important to note that many of these factors are context specific to the country of Sweden. For example, the first factor relates to the high cost of acquiring a driver's license in Sweden, which finds many young people abstaining until they have started their career. The fourth factor can also be related to urban planning practices in Sweden, whereby "a majority of women work in care and service sectors. Most places of work in these sectors are located in or quite near city centres" (Kanyama et al. 1999:360). In this factor the infrastructural policies to build public transport that serves the city centre as its base alongside centrally locating these occupations presents women who do work in these sectors less barriers to choose public transportation. As for the other three factors from this study, these findings are more generally related to the entrance of women into the workforce and their double roles as caretaker of the family and career. With this double responsibility "they tend to be channelled toward lower status jobs," and thus have lower wages than their male counterparts (Tindall et al., 2003:911). This affects the individual barriers woman face in choosing their transportation options.

Safety was a very important concern highlighted in a study by Root et al., for woman's use of public transport (2000). This study found that the perceived dangers of being attacked on public transport was a heavy factor in women's decision to favour the car for their transportation needs (Root et al. 2000:377). This study also supported that women's role as household caretaker, means that they are making more trips for escort and shopping purposes than men (Root et al. 2003:376).

These findings would argue for women being less likely to use public transport, as they must go to many destinations (school, sport practice, etc) and need the capability to carry

a large amount of people and things (groceries, equipment, etc). The findings from this study really emphasize the role that life phase plays in determining transport choices, at least in regards to women, with the finding that responsibilities for children leave women needing their transport choices to be convenient and take minimal time from their busy days. Thus it is revealed that the demographic differences shown for gender have more to do with the roles women face, their responsibilities and external conditions such as public planning, than their particular gender.

The move to sustainable mobility choices is quite complex. The context of mobility decisions is quite important, but individual factors also play a strong role. With such an emphasis on collective good over individual compromise it is very useful for mobility campaigns to focus their efforts on collective programs. Public planning as it relates to goods and services that are within walking distance to homes plays a big factor. Designing public transit routes that serve multiple locations with service that is an effective alternative to a private automobile is also quite important. It is just as important that individuals feel that they are not the only ones' changing their lifestyle. There are also technological issues to consider when proposing a valid alternative to private automobiles. Quite simply if public transit is not reliable or frequent enough that a person still has some flexibility in choosing not to drive their own car they will see the choice of public transportation as an inconvenience to them. These practical obstacles make this behaviour quite hard to change.

6. Conclusion and Final Discussion

The data presented in this paper show a conflicting scheme of internal and external forces at play on green lifestyles and the adoption of pro-environmental behaviour. From the secondary data analysis, it is clear that different dimensions of environmental behaviours are being practiced across different motivations than those most commonly used by researchers, with those behaviours that have been in the media and cultural discourse for longer periods of time having the larger percentage of the population practicing them. Certain pro-environmental behaviours such as purchase behaviours are being more easily adapted because they require small changes from previous lifestyles. Research has shown that while mobility choices continually remain separate from other pro-environmental behaviours, the dimensions that individuals practice is specific to each place, be that geographic or culturally and each intervention or policy must be shaped to deal with the local barriers and opportunities that are available. This being said the results of this study while finding similarities with previous research are not applicable to other areas. Each situation must be evaluated to determine the specific external and individual factors at play. Demographic data has been shown, both in this research and in review of existing data, to be quite contradictory, with some findings indicating a role of gender, income and education for some pro-environmental behaviours, but not all. What is clear is that it is a holistic approach that is needed and with this and previous research to guide us now it is time to move forward and stimulate change to pro-environmental behaviours with the most impact, such as mobility.

To review I will now present the common findings with this research and previous for each factor.

- Concerned Consumer
  - Individual characteristics: responsible for household work, older age, extroverted individual, environmental values and attitudes, feel empowered to act for environment (education) self-identity, knowledge
  - Habits of brand loyalty, revert to previous habits when constrained by time
  - External characteristics: culture/government that allows thinking against current practice, information sources (NGO and governmental campaigns, environmental journals, media), product/supplier freedom of choice, availability of suitable alternatives, labelling scheme, information on products from media or NGO's
- Healthy Home
  - Individual characteristics: gender(women), values of thrift and health, economic saving
  - Habit perhaps passed on from parents,
  - External characteristics: cultural norm of 'common sense', toxic labelling programs, alternatives to toxic cleaners,

- Mobility
  - Individual characteristics: income, gender, access to a car, time/convenience, self-identity, awareness/empowerment, competing goals, risk perception, education level (negative correlation)
  - Habit or attachment to using car
  - External characteristics: public transportation infrastructure, place of residence/public planning(urban structure), cultural norm of driving

These results show a very muddled picture with many factors still determined by each individual's different combination of values, motivations and external barriers and incentives. Thus it is very hard to cite findings from this case that will be applicable to others. It is necessary for research to be done in each place that behaviour interventions will be conducted in. In reviewing the data it is apparent that methodology also plays a big role in extracting applicable results. Surveys must be designed to provide not only a clear picture of respondent's behaviour but also their values. This data must then be combined with interviews or some other method to allow for the external factors present to be accounted for, thus the survey design is very important. It seems that survey data with statistical analysis is not enough to give a clear picture of the motivations and barriers that are present for each individual. It is necessary for researchers to look not just at the individual side, or contextual side, but all sides in order to get a clear picture of what separates different levels of environmental behaviour. Statistical analysis does seem to allow researchers to make dimensions based on common motivations and this helps to accurately reflect the behaviours that are being practiced together in that situation. But as most of these studies are not longitudinal and only detecting the influences on behaviour they are not following up with an intervention; thus it is hard to say if one researcher's method is better suited than another. Another question in research application is the place; almost all studies on pro-environmental behaviour are based in Western cultures and societies. There are also factors within different cultures that make some behaviour more practiced than others, such as policies for mandatory recycling, or strong public

transport infrastructure. The effects of place make it so that each study is only valid for its set of conditions. Alongside this is the effect of time, or the age of the data. The data employed for this analysis is from 2000, and as new technologies and policies are implemented the external barriers and incentives for pro-environmental behaviours change as well as the cultural discourse on environmental issues which can lead to a change in environmental awareness and perception.

This research has been limited in the content of the initial survey questions. This pre-chosen framework has shaped this research and the discovered dimensions. Had different behaviours been included, the results might have ended up completely different. In general comments of the GEB survey, I think there are quite a few items that are inconsequential, or have such a low impact in their affects or gains that they should not be included (for example, preferring to shower or bath when many homes do not contain baths, or turning off one's engine at red lights). The focus on many trivial changes that are of a low impact level is a common problem with the surveys used in environmental behaviour research. These behaviours will not help to reach the aim of sustainability, as the token actions they are including do not make a large difference to the environment.

To move to sustainable development the focus must be on those large changes of consequence; impact behaviours such as mobility and consumption itself. These changes are the hardest because they are so deeply embedded in our culture and infrastructure. From our economic systems requiring consumption for growth to our transportation systems designed with private cars in mind, large changes in our current systems are needed for large sections of the population to move to pro-environmental behaviours of consequence. Our gains have come to mean growth in GDP and these indicators are feeding the over consumption that is wreaking havoc on our irreplaceable environmental life support systems (clean air/water etc.) This notion of consumption boosting the economy and thus fixing all problems does no longer equal real gains into the quality of life. The achievement of sustainable development will require not only the individual consumers to change, but also the businesses (producers) and government. These three actors are so tightly interwoven that any changes will require at least two of them working together to spearhead a motion to sustainability. The data on individual behavioural changes shows, that without the support of either government or business green lifestyles will be only practiced by those individuals strongly committed enough to carve out their own way against the flow of cultural norms.

Future research would be best conducted through long-term studies on a specific set of behaviours that have high environmental impact. For example I have utilized the results of a mobility study on visitors to natural area in the UK (Anable, 2005). In this research they were able to design a survey that gave a very thorough picture of the barriers and incentives for different groups of users to use alternatives to the car. This research should be seen as a phase one, with follow up to trial different behaviour intervention techniques formulated for each particular dimension, and a final evaluation of these results. This would inherently be a tricky proposal, both in funding for long-term research and in the nature of real world experiments. With no lab to neatly control all of the intervening

factors it can become difficult to isolate what are the successful drivers for change for the different sub-groups.

The inconclusive and often contradictory nature of previous research highlights also how many environmental problems are social problems. In that manner they are connected to place, culture and society. For a true solution to sustainable development these behaviours must be integrated into common sense habits and cultural norms. For this to happen it will require not only efforts of individuals to change but governments and industry to collaborate so that the external barriers and incentives are leading people to make a sustainable integration to their lifestyle. This is not an impossible goal and I believe it will be best done through efforts similar to the campaigns and policies to stop littering and smoking.

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