

DO GREEN BUILDINGS INFLUENCE PEOPLE'S
LIFESTYLE DECISIONS AND SUPPORT
FOR ENVIRONMENTAL
POLICY?

by

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Presented to the Faculty of the Graduate School of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

MASTER IN CITY AND REGIONAL PLANNING

THE UNIVERSITY OF TEXAS AT ARLINGTON

December 2007

ACKNOWLEDGEMENTS

Many thanks to Juanita for reading and rereading my final drafts, calling ‘just to check-up’, answering random questions, and texting me at 3am while I wrote. Thanks also to my sister, for staying up late with me, typing edits in the yellow room and for calling just to see how it was going. Thanks to my mom for surrendering her laptop for the last 3 months (could not have done this without it), and for teaching me how to write in dry-erase markers all over the dining room mirrors. To my dad for watching the news on his computer with headphones and for being nice to me when I was rotten. To Emily for not tempting me to accompany her to fun soirées for the last three months, but for convincing me to go out for Halloween, and to Evan for her meticulous edits and late night help. To the University of Redlands and the Johnston Center for Integrative Studies for much-needed inspiration on Homecoming/Alumni Weekend, and the pictures of their LEED building for my presentation. To Dunn Bros Coffee for free wi-fi, and to Devin for free coffee and good beer. To Dalesie and Pooh Bear for comic relief and for keeping me company. Last but definitely not least, thanks to Dr Howard for keeping me in line, helping me out, and editing my drafts with a meticulously critical eye. Thanks to Dr Arvidson and Dr Wyman for being on the committee and taking care of last-minute paperwork (and last minute reading) for me.

December 18, 2007

ABSTRACT

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Publication No. _____

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The University of Texas at Arlington, 2007

Supervising Professor: Dr Jeff Howard

This thesis explores the possibility that experience with green buildings influences peoples' behavior in ways that help bridge the gap between, on one hand, public concern for the natural environment and on the other hand, willingness to adopt sustainable lifestyles and support pro-environmental policies. The study utilizes research on factors that influence behavior to construct a theoretical model in which these factors might be affected by a person's experience in a green building. The study explores two specific possibilities of behavioral change: people may change their

consumption habits to reflect a more sustainable lifestyle; people may change their political behavior to support policies that foster a sustainably built environment or even stricter environmental protection. The study includes a methodological exploration of how surveys could be used to explore the relationship between green buildings and peoples' behavior. It presents data from a pilot survey completed by 33 employees working in LEED-certified buildings in and around Dallas, Texas. The study concludes with recommendations for a more-thorough survey and other research to further develop the theoretical model.

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CHAPTER 1

INTRODUCTION

1.1 Sustainable Buildings and Sustainable Lifestyles

In recent years, the imperative need for people to live sustainably has become evident. Not only has the threat of global warming heightened concern for the uncertain state of the natural environment, but the potentially devastating problems of resource scarcity (such as potable water) and the increasingly apparent consequences of chemical contamination have made sustainability a priority on the world agenda. At the same time, sustainable production methods, materials, products, and services are becoming more available, heightening our ability to conceive of a lifestyle that simultaneously protects the integrity of natural ecosystems and maintains a modern standard of living. However, the interaction between people and these new technologies, as well as the process by which society as a whole will begin to be structured more sustainably still remains to be seen and to be better understood. Further investigation into the relationships between people, their built environments, and their actions can illuminate how these interactions might affect society in general. They may also may better prepare us for possible social changes resulting from individual changes in purchasing behavior and political action. This study aims to illuminate how to go about furthering the limited research of the relationship between the built environment and people's behavioral responses to it (Wener and Carmalt 2007, 158). Here, the focus is

specifically the influence of sustainably designed buildings on people and the way these people then behave in the economic and political arenas.

1.1.1 Background

The construction of sustainable buildings is becoming more common in the United States, a trend that reflects a growing interest in all things sustainable, or *green*. Businesses are realizing that *green* sells, and the characteristic of being green is an increasingly common marketing approach. The definition of the label ‘green’ is altogether a bit illusive because of the vast number of ways that a product or service can be considered sustainable. Therefore, I begin this discourse on green buildings by clarifying the concept of sustainability.

The root *sustain*, in sustainable, implies a continuation. The Brundtland Commission, formerly known as the World Commission on Environment and Development, coined a much-quoted explanation that “sustainable development implies meeting the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). In line with this definition, I use the concept of sustainability to describe practices that support natural resource conservation as well as environmental protection and remediation. As a design standard, buildings can be sustainable in their use of resources both during and after construction. Another application of the concept of sustainability used here pertains to the lifestyle choices a person makes. Sustainability in this context can incorporate numerous choices including the products one purchases and one’s decision to take actions such as to recycle, compost, or take public transit instead of driving.

1.2 Development of the Study

The modern concept of sustainability has developed from an idea that the modern lifestyle, the *status quo*, is unsustainable, signifying the need for change (Dobson and Bell 2006, 263). Much of our lives are spent in our built environments, and with much of the world's population living in cities, the built environment plays an integral role in billions of people's daily lives.

Buildings are often designed with a specific intent expressed through that design, such as intent to inspire worship of the divine, or to encourage spontaneous purchasing. The design itself, as Lewis Mumford asserted, is formed through “the cultural values of its creators” (Savage 1993, 124). Every part of a built hard-scape — from the building's architectural design and the placement of roads and sidewalks, to the materials used for construction and the selection of décor details—is an expression, sometimes subconscious, of the values and cultural norms of the people who made it a reality. Green buildings are designed and built from the designer's value for energy-efficiency and resource conservation. The resulting unique characteristics of green buildings are often noticeably different from a conventionally built modern building. Could it be possible then that green buildings influence people to think differently about sustainability and the possibilities of living a more sustainable lifestyle themselves? This study intends to explore how a built environment as distinctive as green buildings might influence the behavior of the people who work in them.

If green buildings do in fact prove to affect some of the factors that influence people's behavior, as the theoretical model constructed here suggests, what relevance

could this have to society? I first explore the possibility that people's purchasing habits could change as a result of their interaction with a green building. People may begin purchasing sustainably developed products and services with more frequency, which could create a variety of responses such as a collective increase in support of the suppliers of sustainable goods and services, and/or more products and services offered, more competition for people's money, and lower prices for sustainable goods and services. This would be true especially if green buildings do prove to influence peoples' behavior in a way that changes their purchasing decisions that have little or nothing to do with the building directly but with living sustainably in general, such as the decision to buy a hybrid car.

People's behavior regarding environmental policy is the other type of change in behavior which this study explores as a possible consequence of interaction with green buildings. A person's interaction with a green building might include a favorable experience of improved air quality, energy and water efficiency, and unique products that together make the building environmentally sustainable without compromising the quality of life. A realization of the merits of green buildings due to personal experience could result in increased support for policies that encourage or mandate the construction green buildings. Additionally, experience with the monetary as well as the qualitatively valuable costs (or lack thereof) and benefits might even result in a general political attitude favorable to other green products and services. Perhaps positive sentiments regarding the possibility of living a more environmentally-sustainable lifestyle could even result in support for stricter environmental regulations in general. To further

explore how the relationship between green buildings and peoples' behavior might best be understood (especially in these two contexts), a sample survey is also used in this study as a methodological case study.

1.3 Layout of the Paper

This paper begins with a look at the literature that informs the theoretical model that frames this study. The following is a brief overview of the ideas that formulate a possible relationship between green buildings and people's behavior, followed by an analysis of the survey case study and suggestions for further research.

1.3.1 A Disconnect Between Attitude and Action

A person's attitude is commonly thought to be a strong indicator of his or her actions. Although attitude is an influential factor in determining one's behavior, it is difficult to accurately predict a person's behavior because of the other variables that may dissuade a person from acting in accordance to his or her attitudes. In this context of environmental sustainability, it is clear that just because a person is concerned about the future state of the natural environment, he or she may not necessarily recycle or sign Sierra Club petitions or take part in any other behavior that would reflect their concern. Chapter 2 explores the many factors that affect a person's decision to take action, highlighting those which could, theoretically, be influenced by green buildings. Ajzen (2006) has identified *norms*, *perceived behavioral control*, and *intention* as determining factors in one's behavior. Leon Festinger's Theory of Cognitive Dissonance is exceptionally relevant to understanding the incongruity between peoples' attitudes toward the environment and their unsustainable lifestyle choices, explaining how this

dissonance is sometimes resolved by a change in behavior (Cooper 2007). Knowledge is then assessed as a possibly more-influential variable for affecting environmentally sustainable behavior than other types of behavior. The premise here is that green buildings may in a sense “teach” by example by demonstrating how the built environment can be built more sustainably. Through peoples’ personal experiences with green buildings technologies, their awareness may broaden to include technologies and behaviors that would make their lifestyle more efficient and less expensive, while also setting a higher standard of living. Chapter 2 explores these possibilities, which partly form the basis for the following chapters’ exploration of how green buildings may influence changes in people’s purchasing behavior or political behavior.

1.3.2 Changes in Purchasing Habits and Other Behaviors

As people begin to realize how inexpensive, efficient, and comfortable a sustainable lifestyle can be by spending time in a green building, they may begin looking for ways to make their own lifestyle more sustainable. Green buildings introduce people to products that they could sometimes very easily incorporate into their own life. The experience of being in the building may also open people’s minds to the possibilities of using other environmentally sustainable products not directly associated with the building, such as cleaning supplies that are not environmentally damaging. People may also begin to incorporate more environmentally sustainable practices into their personal lifestyle. For example, a person may begin recycling plastic, glass, and aluminum in addition to the paper they already recycle. Especially for people who already incorporate some environmentally sustainable practices in their

life, experience with a green building may augment their desire to live sustainably or expand their knowledge of products and practices they can add into their lifestyle. A person may even begin to seek additional ways to make his or her lifestyle more sustainable, such as composting food scraps or buying an alternatively fueled vehicle. Although these actions have yet to be proven as direct consequences of a person's experience with a green building, further research could identify whether people who have experience with green buildings tend to incorporate into their lives sustainable practices that are not explicitly demonstrated in a green building. Chapter 3 explores the possibility that people working in green buildings may be more inclined to make more-sustainable lifestyle decisions such as choosing to composting, or changing their purchasing habits in general.

1.3.3 Changes in Political Support

For those who are politically active, experience with a green building may influence support for policies that encourage sustainable practices. Endeavors to create new policies, such as national and local standards for newly constructed buildings to be built sustainably, may be better received by the public and possibly even prompted by public support.

Depending on many factors, people's experiences with green buildings could be reflected in an increased motivation to be politically active in general, especially on issues related to environmental sustainability. It is possible that experience with a green building, knowledge of its performance, and personal knowledge of the principles of sustainability could be a catalyst for political engagement. As informed citizens, these

people could regain a sense of power from the experts who currently have major influence in politics. Much of this assertion is hypothetical, but if the factors that influence political behavior and political engagement can in fact be affected by a person's experience with green buildings, then people's political involvement has the potential to positively affect politics. Public support could affectively influence policies that would assist in creating a sustainable built environment and a sustainable society, as well as protecting the natural environment. The objective of Chapter 4 is to explore the framework of these political possibilities.

1.3.4 Survey Component – Why LEED?

The green building industry in the United States has grown significantly in the last decade. Multiple organizations have developed standards to define which building characteristics make a building sustainable. One such program, Leadership in Energy and Environmental Design (LEED), has established a rating system for certifying sustainable buildings. Between 2004 and 2006 the total square footage of all LEED-certified buildings in the United States almost quadrupled (United States Green Building Council 2007). As of July 2006, 15 states and 46 municipalities required that new public buildings be constructed to at least meet the lowest level of LEED certification (Ritter 2006). The market has shown that LEED buildings are able to generate substantial savings that add further value to a LEED building without increasing the cost of construction (Matthiessen 2007). As businesses begin to realize how a sustainable building can help their bottom line in addition to helping the natural environment and improving their employees' health and comfort (Fisk, 2000), there will

be an even more-dramatic increase in the number and square footage of buildings being built sustainably in the years to come.

The U.S. Green Building Council (USGBC) is the parent organization of the LEED program. The USGBC certifies the sustainable construction of new buildings (LEED-NC), upgraded existing buildings (LEED-EB), or commercial interiors (LEED-CI). Each is based on a points system for meeting specific standards in six areas: site sustainability, water efficiency, energy and atmosphere, materials and resources, indoor air quality, and innovations and design process (United States Green Building Council 2007). While some elements are mandatory for LEED certification, the design team chooses other design elements from a standard list, allowing for creativity and innovation.

One underlying goal of the LEED system is to support a transformation of every market involved in the building construction industry (North Texas US Green Building Council 2007, 5). The LEED rating system informs the builders and designers about the ways building components can be combined to improve sustainability of the building, while the demand created by LEED building construction transforms the market for sustainable products and systems.

In this study, the LEED building certification was used as a criterion in selecting the buildings from which employees would be surveyed. The certification system assured a degree of homogeneity in employees' experiences of working in a green building. Also the market-transforming goals of the USGBC parallel this study's emphasis on a change in consumer purchasing behavior.

1.3.5 Survey Structure and Conclusions

Chapter 5 presents a sample survey used as a methodological case study to explore how future research might be able to verify some of the relationships identified in previous chapters between green buildings and people's behavior. The chapter describes the methodology and reasoning used for this survey's design, as well as describes some improvements which would more clearly indicate relationships between the variables. The data results are also presented from the survey I conducted on 33 employees working in LEED-rated buildings in Dallas, Texas and surrounding suburbs. The data collected are not intended to be statistically significant enough to draw sweeping generalizations, nor to prove causations or even exact correlations. The survey mainly serves as a trial to assess how people may reveal their motives and behavior in a survey, and how changes to the survey instrument could better reflect their thoughts and actions. Although the sample size is not statistically significant enough to assert absolute conclusions, the evidence here suggests a need for empirical research on the subject.

1.4 Summation

At the core of this study is an environmentalist's desire to discover the keys to driving our societal development in a more sustainable direction. Much remains to be discovered about the reasons for change in environmental attitudes and activism.

The main objective of this study is to explore the possibility that LEED buildings may have some far-reaching, even unintended effects on society by affecting the behavior of people living or working in those buildings. As people in the U.S. come

into contact with green buildings more often, it has yet to be asked what effects these people may have on the market, the political realm, or their own lifestyles.

The study concludes with recommendations for a more-thorough survey and possible directions for further research of the influence green buildings may have on people, building upon and further developing the theoretical model. Although it is unable to confirm causal relationships between variables, it lays the groundwork for further research in this field.

CHAPTER 2

INFLUENCE OF THE BUILT ENVIRONMENT ON BEHAVIOR

2.1 Introduction

This study of the ways that green buildings may influence people's behavior can be informed by research on how the built environment affects people, as well as research on the factors that influence people's behavior.

Research in environmental psychology has demonstrated that the built environment can influence people's immediate behavior (Nicklas and Bailey 1995; Heschong nd; Davis 2003; Meyers-Levy and Zhu 2007; Ekblom 1995; United States Department of Justice 1996). This study, however, intends to see if green buildings can influence a person's behavior over time and in spaces other than the green building itself. There are numerous factors that influence a person's behavior. A person's attitudes and values can have a significant influence, but these are not necessarily predictors of behavior. For example, a person who is concerned about the future of the environment may not necessarily buy recycled paper or take any number of other actions that contribute to an environmentally sustainable lifestyle. Green buildings, however, may influence people in a way that helps bridge the gap between attitudes and behavior by bringing the issue of environmentally sustainable living to the personal level.

Environmental sustainability is itself a complex idea to comprehend. It is rooted in the belief that humans should safeguard the natural environment in order to sustain the natural ecosystems on which we depend, thereby sustaining the existence of humans. The indefinite timeline of the environmental consequences of our actions today, coupled with the global context of environmental issues results in far-reaching uncertainty that is difficult to fully grasp (Jones 1996, 58). A person can easily be left uncertain of how his or her lifestyle could be contributing to or hindering environmental sustainability.

A person who has experience with a green building is able to personally see how small changes in the way a building is constructed (many of which people can do in their own homes) can create an amazingly efficient structure, a partial model of a sustainable built environment. Green buildings help the individual confront the complexities of sustainability by bringing it to the personal level, demonstrating how the built environment can be more sustainable and how a person can live a more sustainable lifestyle.

This chapter begins with a look at environmental psychology's contribution to the research that demonstrates how the built environment has influenced people's actions. The focus then shifts to people's attitudes and other influences on behavior, and finally, looks at some specific examples of how green buildings *have* influenced people's behavior. The chapter concludes with a call for further research on whether buildings could be affecting people's actions in more indirect ways than past research has demonstrated.

2.2 Environmental Psychology

Environmental psychology has developed in the last 60 years into “a multidisciplinary field of environment and behavior that integrates the conceptual and methodological perspectives of architecture, urban planning, psychology, anthropology, sociology, geography and other disciplines” (Psychological Theories for Environmental Issues 2003, 10). Research generally focuses on the process of interaction between the person and their surroundings regarding specific variables (Hobson 2006). It looks at behavior in a broader context than mere stimulus-reaction studies, to develop a more holistic look at behavior as it relates to a larger context of a complex array of stimuli. The field expanded in the 1970s to explore how fields such as architecture and city planning affect people’s behavior. Covering topics from interior design to urban design, the field of environmental psychology has become directly applicable to other. Despite its roots in a holistic view of stimuli and behavior, environmental psychology research often attempts to isolate specific physical characteristics (i.e., temperature, sunlight, space) to observe their direct influence on behavior. The theory that the physical environment can influence behavior has become known as *physical determinism*: a combination of architectural determinism, whereby physical design factors alone influence behavior, and geographical determinism, whereby features of the natural environment influence behavior (Psychological Theories for Environmental Issues 2003, 1-10).

Concern for the state of the natural environment began gaining global attention with things like the publication of Rachel Carson’s *Silent Spring* (1962) and the

establishment of Greenpeace in the early 1970s. In response, some environmental psychologist began moving away from topics such as territoriality in the office and the relationships between people's values and their perception of landscapes, to establish a new focus "trying to understand and solve resource dilemmas, traffic problems, urban blight and crimes against nature" (Gifford 2007, p200). Attention to issues of sustainability has increased since the publication of the Brundtland report in 1987 (WCED), and recent research in this field reflects this growing interest in the interactions between people and nature (Gifford 2007, p200). Some current work in the field is exploring the influence that certain values and attitudes are having on things like environmental degradation (see Heath and Gifford 2006).

Although the present direction of research in environmental psychology parallels the interests of this study, I was unable to find any work directly relating to the study of green buildings and people. Presently, the research on physical determinism is the only research in the field of environmental psychology only informs this study. However, research on physical determinism is focused on the direct effects of the built environment on a person's immediate awareness and resulting behavior in the space, while this study is exploring whether a built environment can influence people in a way that affects their behavior over time, in spaces other than the building itself.

2.2.1 Proven Effects of Green Buildings on Behavior

Published studies have shown that common LEED elements such as natural daylight, views of the outdoors, and improved indoor air quality have a positive effect on building occupants. Children perform better in schools that have natural daylight

and view of the outdoors (Nicklas and Bailey 1995; Heschong nd), and in such buildings employee absenteeism is lower, especially missed days that are attributable to allergies and sick building syndrome (Davis 2003). I am unable, however, to find any research on the perceptions of people who have practical experience with the technologies unique to sustainable buildings, such as automatic lights, waterless urinals, and permeable pavement. This relationship between sustainable technologies and people who use them in green buildings could be a pivotal influence on people's desire to live a more sustainable lifestyle. It is in this regard that I pose the question for further research into the relationships between sustainable technologies and the people who use them.

2.3 Loving Trees Does Not Always Translate to Buying Recycled Paper: The Disconnect Between Attitude and Action

People's actions are influenced by innumerable variables. From the social environment to the built environment, the factors that influence a decision to take action are specific to both the contextual details and the person's individual attitudes, values, and perceptions. It takes the right combination of factors in the right context to change a person's behavior, but green buildings may prove to be an important contributor, influencing a person to more actively pursue environmental sustainability.

2.3.1 Citizen Attitudes Toward the Environment, as Displayed In National Polls

Kempton, Boster and Hartley produced a major study of American attitudes toward the environment in 1995. Over ten years later, their analysis of the American public still seems to be a quite accurate snapshot of the American public today. [See Appendix A for data from National Polls taken in 2006 and 2007.] Their survey

concluded with these main points: “American have become significantly more proenvironmental since the sixties, and especially since 1980; [and] their environmentalism goes deeper than just opinion or attitude to core values and fundamental beliefs about the world (5).

In 2007, seven separate polling institutions surveyed Americans on their attitudes toward the environment. They found that 45 percent of Americans are personally concerned “a great deal” about lake or river pollution (Global Market Institute); 40 percent think the condition of the environment today is only “fair” and 25 percent say it is poor (Washington Post); about half believe we are “losing ground” in the state of environmental pollution (Pew Research Center) [See Appendix A- National Poll Data, for complete statistics]. Almost half are very concerned about the future of the environment (Global Market Institution) and a 57 percent majority believe the condition of the environment for the next generation will be worse (CBS News/New York Times). Protecting the environment is a “top priority” for 57 percent (Pew Research Center) and half of respondents are “very willing” to change their actions to improve the environment, of which 85 percent would be willing even if personally inconvenienced (ABC News/Washington Post).

Given this broad support for environmental protection, why are Americans not more active in taking personal or political action to ensure environmental protection? (Galston 2007) It appears that many people are unsure why they, themselves, do not take actions that could protect the environment. For example, when participants were asked their main barrier for not recycling, 17 percent (the largest percentage for one

answer) said “Not sure” (Pew Research Center). At least half the American public believes they are personally doing a good job protecting the environment. How can the same people who are concerned about the environment not feel compelled to act on that concern? This is exactly the types of disconnect between attitudes and values, and behavior that is under scrutiny here.

2.3.2 Introduction to Environment and Behavior Analysis

The theory that a person’s attitude about a subject can predict his or her behavior relating to that subject is, at the least, slightly inaccurate. The reality is that many factors influence the actions a person chooses to take, including social and psychological factors. A person’s experience with a green building may not be a definitive factor in a person’s decision to become actively engaged in the pursuit of environmental sustainability, but the person’s experience with a green building may contribute to bridging the gap between one’s attitudes about the environment and the lifestyle choices she or he makes.

Research in environmental psychology has shown physical characteristics of the built environment to influence people’s behavior. For instance, a ceiling’s height creates a feeling of freedom and influences consumer behavior (Mayers-Levy and Zhu 2007) and specific design attributes such as lighting can decrease crime (Ekblom 1995; United States Department of Justice 1996). However, there are a multitude of factors that can indirectly influence a person’s behavioral decisions, and a number of these could possibly be affected by a person’s experience with green buildings. This analysis of the factors that determine action first looks at the influence of perceived personal

efficacy, norms and others' opinions on a person's behavior. Cognitive dissonance then explains how humans seek to resolve conflicting attitudes or values possibly by changing behavior. Grundey (2006) informs the differences between factors that influence a person to initiate a behavior versus continually choosing to carry-out a behavior. Lastly, knowledge is reconsidered here as possibly having a more influential role in determining sustainable behaviors than its present status as a relatively insignificant factor.

2.3.2.1 Social and Psychological Factors that Influence Behavior

Over the years, Icak Ajzen (2002) has formulated a well-accepted Theory of Planned Behavior. The theory connects a person's intention to act with a few other variables to one's actual actions. Here he presents a succinct account of these influences on one's behavior:

Briefly, according to the theory, human behavior is guided by three kinds of considerations: beliefs about the likely consequences or other attributes of the behavior (behavioral beliefs), beliefs about the normative expectations of other people (normative beliefs), and beliefs about the presence of factors that may further or hinder performance of the behavior (control beliefs). In their respective aggregates, behavioral beliefs produce a favorable or unfavorable *attitude toward the behavior*; normative beliefs result in perceived social pressure or *subjective norm*; and control beliefs give rise to *perceived behavioral control*, the perceived ease or difficulty of performing the behavior. In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral *intention*. Finally, given a sufficient degree of *actual* control over the behavior, people are expected to carry out their intentions when the opportunity arises (665).

These factors may be essential in determining whether a person's intention actually leads to action, but there are other phenomena, that appear to have weight in determining one's actions, such as cognitive dissonance, possibly as an influence on one's intention.

Cooper (2007) discusses Leon Festinger's theory of *cognitive dissonance*, the effects of which can cause a change in one's behavior. The theory is that when two ideas in a person's life are in opposition, for example one's desire to protect the environment and one's desire to do some environmentally unsustainable behavior, the person will tend to try to resolve the incongruity between the two ideas. Resolution can simply involve changing the importance of one desire over the other, or resolution may lead to changing one's behavior.

Some of the factors identified by Ajzen and Festinger to directly influence one's behavior could potentially be affected by one's experience in a green building. As far as I know, there is no empirical evidence that green buildings have the ability to affect one's attitude toward living sustainably, the subjective norms one perceives about living a sustainable lifestyle, one's perceived behavioral control in actually helping to protect the environment by trying to live sustainably, nor one's intention of living a sustainable lifestyle, nor influencing the way one resolves his or her cognitively dissonance. Although no empirical research has proven a relationship between green buildings and any of these factors, it seems perfectly logical that a person's experience in a green building could affect some or all of these factors. For example, green buildings can demonstrate some viable alternatives that help a person live more sustainably and

maintain their quality of life, resolving two commonly conflicting values for people, which normally contributes to cognitive dissonance (Jones 1996, 57). The questions of the nature of any relationships between green buildings and the people who work in them, and specifically relationships to the factors that influence those people's behavior, are exactly the questions this study intends to highlight.

Researchers have also yet to explore some crucial variables that relate attitudes toward environmental sustainability and actions that constitute a sustainable lifestyle. There appears to be a differentiation between the factors that influence an initiation of behavior, and factors that influence a continuation of behavior (Stern 1992, 278). Grundey (2006) mentions that the "initiation of behavior may be more related to emotions and the affective area (optimism vs. pessimism; self-esteem; etc) while persistence may be more related to conation (volition) or goal-orientation" (38). Jones (1996) mentions the need to more-fully understand which (and how) environmentally sustainable behaviors relate to one another, noting that some environmentally beneficial behaviors are conceptually related while others are completely separate (63). Although her research is over ten years old, I did not find literature indicating that this research question has been resolved. I add to her call for research a desire to explore how green buildings specifically may influence behaviors such as buying a fuel-efficient car, which is not directly related to what a person might experience in a green buildings. Research on the factors that influence various types of environmentally sustainable behaviors could determine whether one's experience with a green building could

influence types of environmentally sustainable behaviors other than those directly related to products and technologies present in green buildings.

2.3.2.2 Knowledge

One's social environment and psychological experiences influence his or her behavior in specific ways. One's knowledge of a subject is one social influence commonly thought to determine a person's attitudes on a subject and in turn have a profound affect on one's behavior. Campaigns to discourage smoking, prevent teen pregnancies, promote exercise, and stop drunk-driving all employ education as a key component in influencing behavior. The assumption is that additional information will lead to attitude changes that will ultimately lead to changes in behavior, the "information-attitude-behavior" model (Stern 1992 as cited in Jones 1996, 63). The fact though is that people continue to drive drunk despite the warnings, gruesome pictures, legal and financial consequences, and even the possibility of death or homicide. Although influential for some, such knowledge obviously is inconsequential to others. Education has been established in multiple studies as almost inconsequential in determining one's behavior (Geller 1992, as cited in Hobson 2006, 294; Jones 1996, 63). Despite their evidence and assertions, I wonder whether knowledge may have more influence on actions that relate to environmental sustainability. The following presents my speculations that experience with a green building, and information about its unique technologies and the principles of sustainability, can affect the propensity that a person's behavior away from the green building would begin to reflect a more sustainable lifestyle.

2.3.2.3 Speculations On the Importance of Knowledge for the Influence of Green Buildings on Behavior

While interacting with technologies and design characteristics that are sometimes very different from the conventional built environment, a person may need a different way of understanding the way buildings and people's lifestyles affect integrity of the natural environment to accept the lifestyle differences that green buildings can require. An understanding of the reasons behind the strangeness of a green building could make the different technologies or design characteristics easier to deal with. For instance a green building with blinds on tall windows may require manual adjustment which saves electricity from being used for electric controls. A person might be frustrated by the inconvenience until an understanding of the ecological importance of not using electricity for such a needless convenience puts the manual control system into perspective, possibly tempering the person's frustration. In this regard, the knowledge one gains about the green building is an important part of one's experience of working in the building.

Additionally, as employees learn about the specific design and technological decisions made in constructing the building, they are also becoming aware of the principles of sustainability. Granted, not all people who begin working in green buildings are ignorant of the principles of sustainability nor even the standards for LEED design and construction. But even for people who may already be making a conscious effort to live a more-sustainable lifestyle, working in a green building can confirm one's understanding of how to live a more-sustainable lifestyle. For anyone who experiences a green building, the experiential knowledge and information acquired

about the products and technologies used in the building could contribute to their decision to implement sustainable practices or products into their lifestyle away from the green building.

Of the people surveyed working in green buildings in the Dallas area, all had encountered educational material informing them about the building's characteristics. Participants were from three LEED-certified buildings, and most people had encountered pamphlets or had had a conversation that educated them about the building. Most people also had learned about the building through tours, emails, and newspaper articles, and two people actually worked for the firm that had designed the building.

Although there is evidence that the design of green buildings is having a positive effect on the people who use them (Nicklas and Bailey 1995; Heschong nd; Davis 2003), I wonder if green buildings also affect people in a way that is less direct than the way physical determinism has conceptualized the connections in, for example the way a high illumination level in a parking lot deters crime (United States Department of Justice, 1996). Specifically, if people see that a green building do not necessarily compromise their standard of living, the quality of their life, or their lifestyle financing, they may be more inclined to try more-sustainable products or practices in their own lives.

While green buildings are sometimes radically different from conventional buildings, they demonstrate that the sustainable lifestyle does not have to be expensive, difficult, or result in a lower standard of living. In fact, green buildings can promote an even higher standard of living by being better lit by using daylight, electrically

independent by using sun or wind energy generated on-site, and more comfortable by using design characteristics to naturally heat and cool the building. The connection between knowledge and behavior that I'm alluding to does not name knowledge as a determining influence on behavior, but as an important influence nonetheless.

2.4 Conclusions: How Green Buildings May Influence the Connection of Attitude With Action

Although an attitude favorable to environmental protection will strongly influence a person's likelihood of taking action, the attitude itself is not enough to inspire active engagement in activities that promote environmental protection.

It has yet to be determined what specific kinds of experiences might influence a person to take environmentally sustainable actions, and what kinds of actions a person might take as a consequence of his or her experience in a green building. Could people's experience with green buildings provide a necessary link to the personal motivation necessary to connect people's concern for the natural environment to the changes in behavior necessary to ensure environmental sustainability? This is the question I pose for future research on green buildings.

In the following sections I explore the possibility that a person may be more likely to purchase sustainable goods and practice sustainable behaviors, and may be more likely to engage in political support of environmental policy standards, or for protection of the environment in general.

CHAPTER 3

CHANGES IN PURCHASING HABITS

It is difficult to separate a discussion of the preservation of the natural environment and natural resources from a discussion of material consumption. These factors are tied through causal relationships (where consumption of ecologically unsustainable products and services is leading to environmental degradation and natural resource depletion) and cultural expectations (where conspicuous consumption is still a sought-after dream for many and the environment is viewed as a regenerative resource to be exploited for monetary gain). There is the possibility, however, that people will begin to realize that as more people purchase sustainable products and services, the market expands to provide more. Individuals who connect their purchasing behavior to their ecological values may become a potent source for change.

In this study, the behavior and lifestyle decisions of people who work in LEED-rated buildings are being related to their actions as the consumer in the free market, and their perception of consumer efficacy in addressing environmental problems through the market. These relationships, however, are based on specific assumptions about the nature of the free market, the consumer's role in that market, human nature, and collective action, some of which conflict with basic tenants of the neo-classical economic model. Therefore I begin this Chapter with a clarification of my assumptions.

3.1 Economic Framework

A fundamental principle in this study is that the intrinsic value of the natural environment is not fairly represented in the cheap cost of products and services that contribute to environmental problems for which we all pay. The natural ecosystems that are often degraded are vital to our ability to sustain life on the planet, a value that must be accounted for somehow. The premise in this study is that consumers' purchasing decisions can collectively contribute to changes in the way the natural environment is exploited by lowering monetary costs of environmentally harmful products and services.

3.1.1 Well-Informed Purchasing Decisions

Neoclassical economics basically conceptualizes that the way the actions of profit-seeking producers match with the demands of individual utility-maximizing consumers is through the self-regulating free market. The model operates with the assumption of optimal conditions creating a perfectly competitive market where both consumers and producers are well-informed, are self-interested, and make purely rational, purely self-serving decisions. One serious flaw is that consumers often are not well-informed about products or about the production practices they are supporting by purchasing a specific product or service. Production and dissemination of knowledge in the United States is not always sufficient enough to enable well-informed decisions, especially regarding environmental consequences. Even when research is performed, it is not necessarily promoted by the main stream press to inform consumers. For example, current research is being published in *Sierra* and discussed in academic

journals, texts and government reports (but not in mainstream media) about the effects of pharmaceutical drugs on aquatic life in streams. Drugs inadvertently enter the wastewater system via our body waste and flushing of expired prescriptions (treatment plants are currently unequipped to effectively remove them), and tainted water is often released into natural streams from water treatment plants or directly from pharmaceutical production centers. How can a person who wants to make environmentally responsible decisions choose not to contribute to these harmful consequences without knowledge of how s/he is contributing to the problem? This is a serious imperfection in the market (Rauber 2007).

3.1.2 Self-Interested Purchasing Decisions

The neo-classical model also expects consumers to make self-interested decisions based-on the maximization of product utilization compared to price. There are two imperfect assumptions here: people sometimes *do* make selfless decisions to help others; and the full value or price of the product is rarely, if ever, represented in the dollar amount one pays.

A comprehensive explanation of these discrepancies, is not necessary here; the point is that through intentional purchasing decisions consumers may be able to, for example, makeup for the misevaluation of goods by paying more money for a sustainable product, essentially decreasing the externalized costs of unsustainable products. Altruistic consumers, for example, are able to buy fair-trade coffee guaranteed to be from farmers who were paid a fair price for their coffee beans, and consumers who recognize the value of growing food without artificial fertilizers and

chemical bug-repellants can purchase organic food. Consumers' decisions affect which products make a profit, influencing the production of sustainable goods, "voting" with every dollar they spend. Of course, many variables contribute to a person's decision to buy one product over another, and often products appeal to consumers' value for saving time or money. For the ecological consumer, the decision to buy a more-sustainable product often must be intentional because the initial expense for the product is often more than for other, less-sustainable options.

3.1.3 Collective Purchasing Decisions

The niche market for sustainable products has grown considerably in the last decade, but it is still fairly new and relatively susceptible to small changes in demand. As more consumers begin making similar individual decisions, they will make a greater impact on the market. The impact of demand for organic produce, for example, has been demonstrated by Wal-Mart's recent decision to begin carrying organic produce and by food-product producers lobbying to loosen organic standard so more producers can cash-in on the increasing demand. Whether or not consumers are consciously banding together to increase the demand for certain products, such as organic food, the deliberate decisions by hundreds or millions of people to begin purchasing more of a certain product can be seen as collective action in the market. The political effects that result from citizen decisions such as these will be explored in more depth later.

The idea of intentional collective action may not fit easily into the neo-classic model with its *rational economic man*, but it remains a distinct tactic for flexing consumer power in the market. USGBC's president Rick Fedrizzi stated that an explicit

goal of the LEED program is “market transformation” by increasing market demand for ecologically sustainable goods (Fedrizzi 2007). This intentional objective serves a second benefit (besides increasing the amount of sustainable products available), which is a decrease in the cost of building “green”. As more building designers strive to attain LEED certification, and more green products are sought-after, more competition and innovation will develop between suppliers, and prices will fall as suppliers compete for customers. In effect, the price of building green has decreased, creating a stronger financial incentive to continue the green-building trend (Yates 2001; Ries and Bilec 2006). USGBC’s tactic for influencing the market through increased collective demand is already having an impact on the number of people interested in green building, exemplified by the success of their annual Greenbuild Expo. Attendance has expanded in the last five years from 4,100 attendees from 27 countries to 13,300 attendees from 43 countries (Greenbuild Statistics 2007).

3.2 Consumer Responsibility

Consumers in a market economy, whether they realize it or not, have a responsibility to make informed decisions about their purchases. Their responsibility is not only to uphold the integrity of the market system itself, but also to protect the natural environment. Decisions regarding the type of car one drives, how far one drives to work, the size one’s home, and efficiency of appliances all have direct effects on the amount of fossil fuels used (Stern 1992, 281). But seemingly less-significant individual actions and purchasing decisions (such as purchasing bed sheets made from organic, sustainably-harvested, and quick-growing trees) can also have an impact on the market,

especially when many individuals decide that making intentionally sustainable purchasing decisions are essential and commit to purchasing sustainable products, regardless of a higher price.

3.2.1 Which Comes First? The Product or Consumer Desire for it?

The difficulty is that consumers rarely have an opportunity to purchase something that is *not* available. For example, technologies that have not come into mass-production or products that are for sale only in other countries are difficult to get *into* the U.S. market, which can leave consumers feeling a bit helpless. It's almost a Catch-22 between the producers' products and the consumers' demand – especially when neither is fully aware of the technological possibilities for all the sustainable products there *could* be. However, when consumers desire more-sustainable products and take actions against that industry that does not take responsibility for the consequences of wasteful production methods, this action can be a driving force for innovation, for product standards, and for industry production standards.

3.3 National Polls on American Consumption Habits

Kempton, Boster, and Hartley's research (1995) revealed that “the American value for environmentalism affects market and voting behavior” (4). In addition to polls, the authors analyzed voting and market decision data, which showed that Americans are in actuality “willing to commit political and financial resources to environmental protection” (5-6).

Recent opinion polls support their assertion that a majority of Americans are willing to make economic sacrifices and take economic risks to protect the

environment. An April 2007 opinion poll (CBS News and the New York Times) asked participants whether stimulating the economy or protecting the environment is more important to them. Unfortunately the question was directionally biased, pitting environmental protection *against* economic growth, as if new technologies and new regulations that would protect the environment would hinder economic stimulation, which has not proven to be true. Despite this misrepresentation, over half of participants supported environmental protection that would sacrifice economic stimulation, over economic stimulation that would sacrifice environmental protection. It seems that Americans are acting on their values as well. When asked whether he or she had bought any products “because they were better for the environment even though they cost more,” over half named a product they had bought (CBS News and the New York Times, October 2006). Ninety percent also said that s/he buys products made from recycled materials either occasionally or regularly (CBS News and the New York Times, March 2007).

3.4 Summary

It does appear that a little over half of Americans are taking actions that reflect the concern that many Americans feel over the state of the natural environment. The question remains though: are consumers aware of their individual power to collectively influence how their purchasing decisions are affecting the natural environment? Do they even feel they can effectively address environmental problems with their purchasing decisions?

Much the value of the natural environment is intrinsic, meaning that it is valuable “in and of itself without reference to its value for other ends” (Light 2006, 174). This type of value is difficult to accurately represent as a dollar amount in the price of a product or service. As citizens in a capitalistic economy, U.S. consumers have the responsibility to be informed consumers, and have the ability to counteract market imperfections through well-informed, intentional purchasing decisions. It appears that some Americans *are* making these connections. The questions I pose now are: how might an increase in the number of people who experience green buildings affect people’s purchasing habits, and what other economic effects might result from a large-scale change in people’s purchasing behavior?

3.5 Conclusions: The Influence of Green Buildings

Within the last half century the United States has seen an unprecedented surge in the construction of shopping malls, outdoor shopping centers and retail outlets. As Savage (1993) points out, our “urban fabric” seems to have developed to the point “where the only public spaces are those orchestrating consumption and tourism” (125). He goes on to say that “the architectural form of the modern city represents a certain set of values,” implying that our national value of consumerism and economic growth has overtaken the figurative and literal space where once thrived a “public moral sphere” (125). Could sustainably built buildings be a catalyst in the built environment that stimulates, and helps create the means for a surge in environmentally responsible consumer behavior? When discussing the types of changes in behavior that are necessary to make our lifestyle more sustainable, people seem to be wary of the way

their life may change. Jones (1996) addresses this concern, stating that “at a very basic level, there is something about the whole prospect of changing our patterns of consumption and behavior that sounds uncomfortably close to compromising our quality of life” (57). The advantage of green buildings is that people have an opportunity to experience first-hand how their lifestyle may change and may not change if they decide to implement specific practices or products into their lives. Green buildings remove some of the uncertainty, while also being a testing site for the improvement of sustainable technologies and products. There is still so much potential in the possibilities of ways we can live a sustainable lifestyles, green buildings are just the beginning, as is the possibility of changes in consumer behavior.

CHAPTER 4

CHANGES IN POLITICAL SUPPORT

This chapter continues the exploration of possible effects on society, as more people have positive experiences with green buildings and the benefits of a more environmentally sustainable lifestyle. The basic question here addresses what changes may occur in the way people are engaged in the political aspects of environmental sustainability. Will people take advantage of the opportunities they have to make society more environmentally sustainable?

This exploration begins with an investigation of the recent literature that examines why it is important that citizens are involved politically. The chapter then explores the current literature that examines why so few Americans are politically engaged, then turns to the influence of green buildings in the context of political engagement: the way their contribution to individuals' experiential knowledge of environmentally sustainable technologies and systems may address the need for higher quality citizen participation; and whether an increase in people's support for promoting an environmentally sustainable lifestyle could result in more active involvement in political issues.

4.1 The Citizens' Civic Responsibility

Civic responsibility in this study refers to one's participation in the political realm where informed citizens engage in the process of policy formation. All too often,

however, citizens' responsibilities are taken for granted. In the United States, we have seen a steady decline in citizen participation in the political realm, from voter turn-out to participation in civic organizations. "Citizenship is something that most of us today see as only a guarantee or of certain rights, but not of demanding responsibilities of us, other than leaving one another alone" (Light 2006,137).

Citizen participation in politics is vital to compensate for the failures of the market, the state, and the production of knowledge, especially as local environmental issues are concerned (Hayward 1998, 163). Engaged citizens can choose to be involved in protests, campaigns, marches, boycotts, lobbying, financial or personal involvement in political organizations, and numerous other ways of pressuring politicians and economic players (John Dryzek – 1996, as cited in Hayward 1998, 163; Stern 1992, 286). In the most basic sense, the conscientiously active citizen does not "regard politics as a nuisance to be avoided, or a spectacle to be witnessed" (quoting Richard Dagger in Light 2006, 177), and the *intention* to be a good citizen is followed by action within the public realm (Light 2006 177). Specifically, the responsibilities of the citizen to promote sustainability include taking personal responsibility for one's actions (Dobson and Bell 2006, 605), engaging in "protect[ing] the interests of future generations and non-humans by actively participating in political debates about sustainability," and cooperating with and engaging in community environmental initiatives (Dobson and Bell 2006, 105). Just as consumers have the responsibility to educate themselves, so are citizens required to educate themselves, so they are able to make well-informed decisions. "We need critical citizens, not just law-abiding ones";

Citizens whose political actions are in line with their values and their analytical evaluation of topics (Dobson and Bell 2006, 40). For Andrew Dobson (2003), a citizen's political responsibility requires a more astute awareness of his or her own principles and values than is required of a mindless consumer who is resigned simply to "react to superficial signals" (606).

4.2 American Disengagement

4.2.1 Americans are Consumers

Dobson and Bell and others see the lack of citizen engagement in politics as a sign that the citizen's role of the active participant has been usurped by the role of the consumer. "Most eco-political scholars are...dissatisfied with the disempowerment of citizens through representative government and the reduction of citizen participation to periodic voting" (Torgerson 1999 as cited in Dobson and Bell 2006, 105) and are also concerned with the political identities embraced by people living in globalized capitalist cities as that of consumer and taxpayer rather than the less self-interested citizen (Dobson and Bell 2006; Fischer 2003). This cultural conception of one's identity within the nation seems supported by other cultural norms of "unsustainable material accumulation rather than conservation, instant personal gratification rather than prudential social planning, and competition rather than cooperation" (MacGregor 2006, 105). MacGregor's view is echoed by Nash and Lewis, who argue that "the contradictory nature of environmental opinion and material expectations" in Western industrial societies could be causing "a potentially significant barrier to fruitful citizenship..." (Nash and Lewis 2006, 153). A more descriptive example of this

dichotomy is that “support for environmental protection [is] accompanied by the expectation that individual material wealth and consumption will continue to increase in the future” (ibid). The two are distinctly at odds, and the conflict is difficult to resolve. In a blunt explanation of the relationship, Savage and Ward (1993) simply blame society’s focus on consumption in general for the erosion of public life (125). As established in the previous section, consumers may very well be able to participate in environmental protection by being intentional, knowledgeable participants in the market. However, the passive power of the consumer pales in comparison to the active power of the politically engaged citizen.

4.2.2 Personal Efficacy

Just as personal efficacy impacts whether attitudes are acted upon, personal efficacy also affects one’s political involvement. Stanley Renshon (1974), author of *Psychological Needs and Political Behavior* states, that since “civic obligation by itself is not intrinsically motivating,” there must be more salient factors that motivate a person to political participation (25). Renshon asserts that a major motivating factor is our desire to have personal control in the political realm that directly affects our life (244). He found that individuals who felt they had little personal control in the political realm were more likely to feel politically alienated and more likely to rate government as ineffective (243); and ultimately, he warned “the least efficacious participate less” (237). Ellen, Wiener and Cobb-Walgren (1991) also quote Brown’s 1979 study showing that a sense of futility can develop even from witnessing others’ failure, as well as their own failure or uncontrollability. “They come to expect that they cannot

affect outcomes through their actions [which in turn] debilitates performance....as well as undermining motivation” (105).

4.2.3 The Roles of Experts

For Fischer (2003), the lack of citizen participation reflects disenchantment with the government’s interest in actual citizen participation. It should be no surprise that for citizens who have lost faith and lost interest in government agencies neglect to attend meetings orchestrated by government agencies, Fischer points out. It is especially understandable when citizens’ suspicions have been confirmed that “such participation is only a window dressing for decisions that will be made by others” (34). This situation which explains some of the lack of citizen involvement, also explains why citizens often lack knowledge of political topics. Some theorists even use their resulting lack of knowledge to question whether citizens should be given more participatory opportunities to begin with. As Irwin (1995) explains:

What is the incentive to learn more about chemical works when a resident’s voice is insignificant (and when one feels hemmed-in by the absence of alternatives)? In such a situation, greater knowledge of, for example, chemical hazards simply creates greater frustration and raises the sense of helplessness. At its most extreme...the technical nature of the official discourses can encourage public self-censorship – concerns seep out within casual conversations rather than being formally presented to those “in control” (102).

Experts are, in effect, enabled to continue their discourse uninterrupted.

Critics of the dominance of expert knowledge fault experts not only for their inability to generate solutions that are more applicable to the diversity of society as a

whole, but also for their seemingly deliberate intention to use their professional authority to protect “power elites” from political challenges from the citizenry (Fischer 2003, 31). Fisher uses “Reganomics” to demonstrate how experts and professional often “self-servingly embrace a blatantly ideological program despite its disastrous fiscal implications for the country as a whole” (41). Regardless of over-inflated expectations, experts cannot be expected to have the answers that will solve the prevailing social ills of the nation. Experts are often put in a position to advise or even determine policy on social issues of national proportions, but even they are human—even the most conscientious at avoiding conflicts of interest will be forced to make concessions when professional ideological commitments create conflicts of interest (Fischer 2003, 41). Citizen acquiescence to the ideas of experts and lack of obvious dissent should not, however, be entirely considered as consent or agreement. Citizens often find themselves dependent upon experts and keep their doubts confidential while they act as if they trust the expert. (Fischer 2003, 62).

4.2.3.1 Distrust of Experts

In addition to the general distrust of experts and professionals who seem “more interested in increasing their own authority, power and wealth” than contributing to the public good (Fischer 2003, 30), the increase in the uncertainty of modern technological advancements and ecological complexities has lessened citizen faith in the expert’s power. Citizens now may be more aware of the limits of knowledge, particularly relating to unanticipated consequences that even the experts cannot reliably predict (Fisher 2003, 61).

Two recent national polls of US citizens asked specifically whether they trust what scientists say about the environment. Although conducted approximately a year apart, both surveys yielded similar results. (See Table 4.1)

Table 4.1 Trust What Scientists Say

How much do you trust the things that scientists say about the environment: completely, a lot, a moderate amount, a little, or not at all?		
Answers	ABC/Washington Post 2006	ABC/Washington Post 2007
Completely	5	5
A lot	7	27
Moderate amount	41	43
Little	22	19
Not at all	5	5
No opinion	1	1

The results seem fairly consistent: a small percentage of citizens admit to agreeing with either extreme, a majority “trusting a moderate amount”, and a smaller group “trusting a little”. Given the inferences of Fischer and Irwin, the national poll data seems to show more positive trust of experts than expected. Fischer does mention though that with the deconstruction of expert knowledge some citizens are taking the opportunity to identify individual experts with whom they can trust (Fischer 2003, 61). The persistent existence of complexity and uncertainty in many realms of society necessitates that experts continue to provide their expertise despite the unattainable nature of absolute comprehension (Irwin 1995, 55).

4.2.3.2 Construction of Knowledge

Experts wield significant influence constructing knowledge. What is considered legitimate knowledge is directly affected and primarily defined by experts and

scientists, who gain this power as a result of the value placed on scientifically proven data. In effect, experts impact the existing social order in the way they frame scientific and social questions, deeply affecting which questions are considered worthy of pursuit, which approaches are prescribed for the solution, and which ideas may become the forefront of the field and mainstream knowledge (Irwin, 1995). In the process of defining what information is focused on, citizens' local experiential knowledge is often disregarded as unintelligent or simply wrong. Citizens have been marginalized in their ability to contribute to the construction of knowledge regardless of whether their experiential knowledge is legitimately significant to the field, or how the situational outcomes will directly affect their lives.

4.2.3.3 Uncertainty and Environmental Complexity: The Need for Citizen Participation

The recent shift in public perception of experts as authoritative leaders to a more skeptical distrust of their power games is particularly evident regarding the uncertainty that characterizes current environmental issues. In addition to issues such as global climate change, citizens and experts alike have begun to question the sustainability of the modern lifestyle. These two, combined, create an unique situation where: expertise is clearly insufficient to fully comprehend and solve these issues, where the desire for more information is almost overwhelming, and where citizens may seize the opportunity to contribute to the conception of these issues. As Irwin states, "citizens are now in a position to shape the *process* of modernization..." (Irwin 1995, 44 not original italics).

4.2.3.4 A Place for Citizen Participation

Rather than following the model for political engagement through political parties and mainstream political activities, citizens already seem to be participating in a variety of activities that are re-establishing the model of participatory engagement. The complexity and global scope of environmental issues, and particularly their direct relations to local environmental problems, has allowed citizens to participate in affecting change through activities that circumvent traditional political avenues of citizen participation. Within this emergent reformulation of knowledge, and the role of citizens and experts, the eminent question will be “How can we interconnect and coordinate the different but inherently interdependent discourses of citizens and experts?” (Fischer 2003, 45). Not every citizen will be able understand the intricacies of complex issues the way an expert can, but citizens are nevertheless have unique experiences, observations and knowledge to contribute. Citizen testimony can provide essential information to supplement a comprehensive assessment of both the qualitative and quantitative factors within an issue, expanding public debates and possibly revealing controversial issues (Irwin 1995, 148).

4.2.3.5 Civic Engagement as Political Participation

In the quest to understand why more people are not actively engaged in politics, Zukin et al explored the distinction between civic activities (such as volunteering, and participating in community organizations) and political activities (voting, and the traditional involvement in the political system), found a connection between civic engagement as a form of political involvement (2006, 193-200). Though their overall

conclusions supported the widely-held inference that “more younger Americans than older ones are disengaged from any form of participation” and fewer will likely engage in traditional politics regularly or in civic involvement *and* political involvement at all (200). They did find that the younger generations (GenXers, from about forty years old now to the younger DotNets.) are involved in civic volunteering and other actions, (which sometimes does lead to political engagement, later in life) (196). More importantly, the higher percentage of DotNets and GenXers involved in civic activities verses those of older generations, may be signifying an “intentional effort to affect politics and policy through other avenues—that is, a rejection of the *means* of politics and policy but not the *ends*” (194).

4.3 The Influence of Green Buildings

Similar to the way Zukin’s analysis concludes that a person’s civic involvement may lead to political engagement, I wonder if a person’s experience with green buildings and change in sustainable behavior might lead to an increase in political support for laws and standards which would make society more sustainable, and support for stricter environmental regulations in general.

4.3.1 Support for Laws, Regulations, and Standards

A majority of Americans believe that “Protecting the environment is so important that requirements and standards cannot be too high and continuing environmental improvements must be made regardless of cost” (CBS News, New York Times November 2006). Over half of Americans also would support a law in their area requiring all showerheads or all newly installed toilets to be low-flow type--51% for the

showerheads and 71% support for the toilets (ABC News and Washington Post April 20, 2007). If Americans already seem to be showing support for laws that enforce a more environmentally sustainable lifestyle, I speculate that the people who experience a green building would show similar, if not increased, support for such laws.

4.3.1.1 Green Building Standards

Support for a city-wide green building standard is already making an impact in the city of Dallas. The City now has 5 LEED certified buildings and 42 more are awaiting certification (“USGBC Certified Project List.” 2007). The City has decided to write “green” construction standards that would apply to all new homes, office towers, stores, schools, industrial facilities and warehouses built within its city limits (Allen 2007). As more Americans experience the benefits of green buildings, more cities may begin to develop city-wide standards such as Dallas and nationwide requirements could even gain recognition on the national agenda. (See Stone 1988 for further exploration of the process by which ideas gain national recognition.)

4.3.2 *Support for Stricter Environmental Regulations*

It may seem like a stretch to suppose that green buildings might influence people’s desire to protect the environment, but it appears that people may be more supportive of environmental protection if they know it will not compromise the health of the economy, as believed to be true for so long.

4.3.2.1 The General American Public

Almost all Americans (93 percent) would like Congress to do more to protect the environment (ABC News March 2006), and about half of Americans (54 percent)

say that stronger environmental regulations are very important or extremely important (NBC News and Wall Street Journal 2004). These polls suggest that a majority of the American public would support stronger regulations and the following suggests that those same Americans would support environmental protection regardless of the cost. When Americans were asked whether environmental protection should be pursued regardless of possible tax increases or job losses, almost half (46 percent) agreed (Greenberg Quinlan Rosner Research 2006), and a separate study found that 56% of Americans believe regulation and environmental protection are worth the costs (Pew Research Center, August 2006).

4.3.2.2 The People of Chicago

Coincidentally, 800 residents in each of three cities were also asked whether regulation and environmental protection are worth the costs of job loss and economic burden. Answers reflected a similar spread as the national sample, but a slight difference between the cities themselves merits further analysis.

A closer look at the breakdown between the three cities reveals that more participants in Chicago (69%) than the other two cities (65% for Phoenix and 64% Las Vegas) answered that environmental laws and regulations would be worth the cost. The city of Chicago is a national leader in the construction of living “green” roofs atop both public and private buildings, and there are significantly more LEED-certified buildings in Chicago (25), than Las Vegas (2) or Phoenix (4) (“USGBC Certified Project List” 2007). Could these participant answers be attributed somehow to the Chicago citizens’ experience with LEED-certified buildings? Perhaps they have seen firsthand that

regulations that have made their lifestyles more environmentally sustainable have not necessarily incurred adverse costs to the economy or job market? Perhaps, they haven't had any personal experience, but the culture of the people in Chicago typifies a more positive disposition toward environmentally sustainable technologies, policies and possibilities. This small difference in the poll results ignites curiosity in the possibility if a much more significant correlation.

4.3.3 Summary

People's experiences with green buildings are becoming more frequent, with the result that the advantages of building "green" and the advantages of living a sustainable lifestyle are becoming more-widely understood. Construction of LEED buildings is proving that the upfront costs of this type of construction can be comparable if not less expensive than the costs of constructing typical buildings, and the environmental benefits are far greater (Fisk 2000; Matthiessen 2007). If the people who experience green buildings begin to see the sustainable lifestyle does not have to adversely affect the economy, they may add significantly to a growing public support for laws and standards that will create a more sustainable society, and possibly even stricter environmental regulations.

4.4 Conclusions and Final Points

There are complicated reasons why people choose not to participate in politics. A brief examination of the literature explaining why Americans are not very politically active, gives a complex picture of disengaged people facing a new opportunity to contribute to society's development. Beyond the involvement of citizens in passing

environmental laws and regulations, Fischer (2003) speculates that the dynamics of policy formation itself may evolve, as citizens reclaim their ability to be knowledgeable about environmental issues. Dobson and Bell (2006) describe a “sustainable citizenship” where citizens actively participate in changing the economic and social structures that have created environmental problems (23-24). This kind of active citizenship requires not only insight to the economic and social structures which contribute to problems of environmental sustainability, but also a desire to see change, and to take action to bring about that change. Paehlke (2000) agrees, stating that widely shared ideas and values “can provoke a strong political response” and can even have the weight to bring a new political agenda to light (80).

CHAPTER 5

PILOT SURVEY

The survey conducted for this study explores the methodology that could be used to further investigate the relationships identified here between green buildings and people's behavior. The survey data are not intended to provide a basis for explaining underlying causation, and the size of the study is not intended to be a statistically representative sample of the population. The survey is simply an exploratory tool to begin probing how future research may best be able to answer the questions this study is asking.

The analysis of this part of the study begins with a qualification of data collected by survey, relating to the nature of survey data capture in general and the nature of this study's topic specifically. I then present an overview of the study's methodology and the rationale for the design of the survey instrument. The data from the pilot survey is compared to the relationships described in the theoretical framework, as they arise in the data analysis. After a brief explanation of the survey questions that relate to each of the topics addressed in the theoretical model, each section concludes with suggestions for an improved, more-thorough survey and further research that could indicate whether green buildings indeed influence people to change their behavior.

5.1 Other Influences

When relying upon survey data for empirical proof, one must keep in mind the nature of surveys, the way people react to the medium, and some of the limitations of survey data. Survey assessments, by nature, have a built-in bias by the way people represent themselves through the medium. The nature of surveys is that people are sometimes forced to think about issues they may never have conceived of. The structure of the survey, the topic, and the survey lay-out all influence the participants thoughts as they take the survey, and occasionally they are formulating their answers for the first time as they progress through the survey. Stern (1992) notes that surveys often ask for self-reported data on behavior, but that self-reported behaviors are “not always reliable indicators of actual behavior,” stating that they “may actually coordinate more strongly with attitudes than actual behavior does” (282). Even with these considerations in mind some noteworthy relationships can emerge from the data.

For this study specifically, there are a number of factors that are difficult to isolate or control, which could affect the conclusions that can be drawn. For example, it is difficult to pinpoint whether a causal relationship exists between people being environmentally conscious and the fact that some of them are working in the sustainably built buildings. In other words, it is difficult to say whether a person is attracted to a specific company that has its office in a LEED-certified building because the person would like to work in a company with similar values, or whether a company has a penchant for hiring employees who share their views on ecological sustainability,

or whether the buildings themselves somehow inspire or teach employees about the advantages of living more sustainably.

In addition, due to the innumerable influences on a person's lifestyle decisions, it is equally as difficult to take into account all the variables for example, a person who does not recycle because the apartment complex where they live does not provide the service for the collection of recyclables. This survey has attempted to cover as many extraneous variables as possible and begin the analysis to sort-through some of those relationships. Local culturally-specific variables, on the other hand, most likely did not need to be controlled in this particular study because everyone lived in the Dallas metropolis, whereas local culture could be a determining factor in some behaviors, such as the probability that a person would bike, walk, or take public transit to work.

Some of these factors that influence the accuracy of the survey data are within the control of the survey instrument or design, and some simply need to be kept in mind as the data is analyzed in the search for truth. This study attempted to account for the variables that are within its control. As with all surveys, one must keep in mind the fallacies in thinking that could arise when one forgets that the data is simply a person's personal account of their thoughts and behaviors that they may not even be fully aware of.

5.2 Methodology

This survey is designed with the intention of capturing an accurate assessment of participants' lifestyle decisions and purchasing decisions, their motivations for their

purchasing behavior and political behavior, and their attitudes and values regarding the natural environment.

This small sample survey was conducted with equivalent integrity expected of a larger study, to assure consistency and reliability of the results. Survey data was gathered from 33 anonymous employees in four offices located in three LEED-certified buildings in Dallas, Texas and surrounding suburbs. (Two offices are located in the same building.) I requested assistance in contacting offices in LEED buildings from a member of the North Texas Chapter of the USGBC, and discussed the project by email with the contacts he provided. We arranged a time to meet, and in October 2007 I took the surveys to the offices to be distributed by my office contacts. A stamped, self-addressed envelope was attached to each survey for participants to mail individually, leaving participants with no doubt of confidentiality within the office. I distributed all surveys within the same week preventing even the pattern of survey return to from reflecting their sources in specific offices. Everyone was encouraged to participate, including administrative assistants and managers.

5.2.1 Rationale for the Survey Instrument

The survey instrument is designed to address a number of specific questions that could support the theoretical framework of the relationship between green buildings and peoples' behavior. [See Appendix C Survey Instrument] Participants are first asked how long they have worked in the building. The theoretical framework hinges upon the person's familiarity with, knowledge of, and intimate experience with the building's unique design components, all of which can vary by the length of time the person has

spent working in the building. Then participants are asked to establish their degree of familiarity with the building by answering whether it is LEED-certified, and identifying which characteristics listed are present in their building. The fourth question identifies the methods whereby the person has learned about the building, to judge by a second method how informed they might be about the building's unique characteristics.

The subsequent questions begin the inquiry into the person's personal lifestyle decisions and personal motivations and attitudes. Beginning with whether the building has "made you more environmentally sensitive or inspired you to change your behavior," and the degree to which the person has been influenced, from "merely think about the environment more" to "have made major changes in my life." Following, participants were asked to identify, from a list, the actions which they personally have taken in their own home to lessen their environmental footprint. Choices ranged from recycling various materials to changing showerheads to the low-flow variety, and a subsequent question asked about ten additional actions ranging from using "environmentally friendly" cleaning supplies and bug killers to driving a hybrid or fuel-efficient vehicle, to donating money to an environmentally-supportive organization. The following three questions pertain to the person's perceived ability to impact the market for sustainable goods and the importance s/he places on buying goods for environmental or political reasons and on being active in politics. They each approached the variable of "perceived behavioral control" from a slightly different perspective, and all three were seen to possibly impact the answer to a previous question: "how often do you purchase eco-friendly products or brands when they cost

more than regular products or brands?” Together these questions are an attempt to tease-apart the reasons why a person would choose to make environmentally protective purchasing decisions, beyond the influential variable of price. The next five questions identified the respondent’s attitudes and values regarding the natural environment: his or her perception of the current state and his or her concern for the future of the natural environment, the degree the person thinks about his or her personal impact on the environment, the degree to which the person considers herself or himself an environmentalist, and whether s/he thinks environmental protection conflicts with economic growth. Last, three demographic questions ask for the highest attained education level (which could affect one’s understanding of issues of environmental sustainability), income (which could affect one’s ability to spend extra money on products or services that are better for the environment), and the number and ages of children and grandchildren the person has (which might affect the value they place on protection of the environment for future generations).

To the benefit of a larger survey sample statistically significant enough to generalize to the national U.S. population, some questions in this survey have been either borrowed verbatim or closely paraphrased from national U.S. surveys conducted within the last 2 years (with the exception of one poll question from 2004). [See Appendix B Data Comparing National Polls to LEED Employee Survey.]

5.3 Survey Data

The survey data in this study is meant to test how best to go about empirically verifying the relationships discussed in this theoretical framework. The survey focuses

on the three fundamental relationships discussed thus far: factors that could influence sustainable behaviors, purchasing attitudes and behavior, and political attitudes and behavior.

5.3.1 Influential Factors on One's Behavior

As has been established, there are many variables that influence a person's behavior. The survey analysis here begins with an exploration of some key variables that may prove influential in determining environmentally sustainable behavior such as participants' attitudes toward the natural environment, participants' income, educational attainment, and possibly even whether the person has children and/or grandchildren. Other possibly influential variables that are not addressed in this survey are mentioned later, as recommendations for inclusion in future studies. The survey assessment then turns to participants' purchasing values, attitudes, beliefs and behavior, then to their political attitudes and behavior expressed in the survey.

5.3.1.1 Perception of State of the Environment

Although attitude cannot be used to solely *predict* a person's behavior, it is an influential factor that merits assessment. This survey measures participants' attitudes toward the natural environment, and inquires about their perceived role in ensuring its protection.

Participants are first asked to rate the present overall condition of the environment including the quality of the air, land, water, and wildlife. The Dallas-area LEED-building employees rated the condition of the environment on a 5-point scale, with 80% of participants rating an even split between a 2 (poor) or a 3 (fair).

Participants then rated their concern for the future of the environment on a 5-point scale, with 45 percent choosing a 5 (very concerned), 36 percent choosing a 4, and 18 percent choosing a 3 [See Table 5.1 below.]

Table 5.1 LEED Survey- Ratings of Present and Future State of Environment

Rating	Present State	Rating	Future State
5 Excellent	- %	5 Very concerned	45%
4 Good	18	4	36
3 Fair	39	3	18
2 Poor	39	2	-
1 Very Poor	3	1 Not at all concerned	-

The variations in the answers appears to reflect that the questions are asking different things about people’s assessment of the state of the environment. The comparison of their answers to these two questions could better illuminate how people perceive the environment, as well as give clues to how they are motivated to take actions to preserve its integrity.

When these answers are compared to a sample of the national population, the perceptions of people who work in LEED buildings can be compared to the general population to see if their attitudes differ. This sample of employees working in LEED buildings appears to have a strikingly similar assessment of the present and future states of the natural environment. [See Table 5.2 below.]

Table 5.2 National Polls- Ratings of Present and Future State of Environment

During the past year, how much did you think about the impact that you personally had on the natural environment - a great deal, a lot, a moderate amount, a little, or not at all? - ABC News, March 2006		How would you rate the condition of the environment in the world today -- that is, the overall condition and quality of the air, water, land, and wildlife -- is it excellent, good, fair, or poor? - ABC News/ Washington Post April 2007	
A Great Deal	16%	Excellent	3%
A lot	20	Good	20
Moderate Amount	35	Fair	41
Little	22	Poor	26
Not at All	8	Very Poor	9
		Don't know/No answer	<0.5

5.3.1.2 Participant's Role in Environmental Protection

The LEED employees were asked about the frequency that they think about their personal impact on the environment, and the degree that they consider themselves an environmentalist to assess the degree that they personally see themselves concerned with environmental protection. Rating on a 5-point scale, almost 90 percent of LEED employee participants rated the frequency that they think about their personal impact on the environment at a 3 (sometimes) or a 4 (often), split almost evenly between the two. [See Table 5.3 below.] Almost 80 percent of participants also either moderately (3) or substantially (4) consider themselves an environmentalist. [See table 5.3.] The survey results here can also be compared to a recent national poll, which could identify any differences between sentiments of the people who work in LEED buildings and the general population.

Table 5.3 LEED Survey- Personally Concerned with Environmental Protection

Rating	Frequency one thinks about personal impact	Rating	Degree considers oneself an environmentalist
5 All the time	3 %	5 Die hard	- %
4 Often	42	4 Substantial	9
3 Sometimes	45	3 Moderate	67
2 Barely any	9	2 Barely	24
1 Not at all	-	1 Couldn't care less	-

5.3.1.3 Additional Influential Factors

The pilot survey concluded with a few demographic questions about factors such as education, income, and whether one has a child/grandchild. Some factors that might prove to be influential on one's decision to perform environmentally sustainable behaviors.

The population of participants for this survey represented a variety of educational attainment and income levels. All had at least graduated high school, two had a PhD, four had a Masters degree, 12 had attained their Bachelor's degree, and seven had an Associate's degree. Although educational attainment does not seem to be a factor that correlated with any of the main variables, income does. Approximately half of the participants (15) made over \$100,000 per year, 10 made between \$60,000 and \$100,000, and seven made between \$30,000 and \$60,000 per year. With the variety in this representation of income levels, it appears that income may have a correlation to the frequency that a person buys sustainable products or brands when they cost more than regular products or brands. Although a person's income level has not been considered an important factor in determining whether a person would be affected by

green buildings, it may be a factor that affects whether their inclinations results in changes in behavior. [See Appendix D Survey Data for data on this point.]

The concept of sustainability is based on a concern for the ability of future generations to provide for themselves. This survey asked participants if they had any children or grandchildren, to see if people with an intimate connection to future generations demonstrate a stronger connection to the imperative of sustainability. Of the 33 participants in the pilot survey, 21 had at least one child, 12 had none. To determine whether this is an influential factor, I compare the two groups' answers to specific questions. One such comparison would be in the frequency that the person thinks about his or her impact on the environment. The theoretical model would assume that people with a child would care more about wanting to protect the natural environment, and might then think of their own impact more often than those without a child. The preliminary sample participants did seem to support this theory: a 66% majority of participants without a child think about their impact sometimes (3), while a 48% majority of participants with a child think about their impact often (4). [See Table 5.4.] Further analysis could even identify whether the age of the person's child or grandchild correlates to the person's behaviors or attitudes.

Table 5.4 LEED Survey – Think of Impact With and Without a Child

Answers	People With a Child	People Without a Child
5 All the time	5%	- %
4 Often	48	33
3 Sometimes	29	66
2 Barely any	19	-
1 Not at all	-	-

People’s awareness of the buildings unique attributes and knowledge of how and why they work many also prove to influence peoples’ behavior, as discussed in Chapter 2. The pilot survey began by asking participants whether the building they worked in is LEED-certified, of which all participants answered yes. The survey then asked participants to identify, from a list, which attributes and products were present in or on the grounds of the building they worked in. All three buildings incorporated at least six if not all eight of the attributes and products listed, and all but three (nine percent) of the participants checked six or more of the items. The survey also asked participants to check all the ways they had been informed about the building, to see how ubiquitous is the information about green buildings for these people who spend large amounts of time in the building.

Table 5.5 LEED Survey – Sources of Information on Green Buildings

Source	Percent
Conversation	94
Pamphlet	73
Sign	45
Newspaper	48
Email	36
Tour	21
Movie	0

Almost all participants had learned about the building through conversation (94 percent), most had encountered pamphlets (73 percent), about half had read a newspaper article and half had read a sign. [See Table 5.5.] These questions begin to probe at how knowledgeable the person is of the building. More extensive questioning would be needed to really begin to grasp what the person actually understands about the building and importance of its specific design and technological attributes.

Although the survey provided some data on the knowledge that participants have on the building in general, further research could focus on determining if a buildings influence peoples' knowledge of sustainable issues and the tenets of sustainability. Further research should also address whether a person's behaviors are influenced by their knowledge of the building and the reasons for its different design attributes and technologies.

5.3.2 Assessment of Behavior

The survey participants' behavior is a major element to the study as pivotal evidence to the theoretical model. If the people who work in green buildings do incorporate more sustainable behaviors into their lifestyle away from the building itself, that is an important correlation. The key is, whether they have begun to incorporate more behaviors after having started working in the green building. The pilot survey's first question asked the participant how long s/he has worked in the building. The second page inquired about the person's behavior in his or her personal life away from the building, beginning with whether the participant thinks the building has "made you more environmentally sensitive or inspired you to change your behavior?" next rating

the degree that his or her behavior had changed, if at all. Here, I break the survey's results into four groups by length of time the person has worked in the LEED building. Eight people had worked from 1 to 2.5 months in the building, thirteen from 3 to 5 months, seven from 6 to 10 months, and five from 16 to 30 months (those durations left out were not represented in the survey sample.) When the results of these behavioral questions are analyzed according to the length of time the person has worked in the building, some critical patterns may appear. For the participants in the pilot survey, there does not seem to be a recognizable pattern to the data of how people perceive that their own behavior has changed because of the building. [See Table 5.6.]

Table 5.6 LEED Survey – Has the Building Influenced You?

Answer	Length of Time Working in Building			
	1-2.5 mo.	3-5 mo.	6-10 mo.	16-30 mo.
Yes, and:				
5 - Have made major changes in my life	1	-	-	-
4 - Have changed a good number of things	1	5	2	1
3 - Have changed a few things in my life	6	6	4	4
2 - Have thought about making changes but haven't	-	1	-	-
1 - Merely think about the environment more	-	-	-	-
No	-	1	1	-

The answers from this question are not all consistent with the participants' answers to the questions that ask about specific actions they have taken or routinely do. This could simply be the result of the nature of surveys, in which the person's account

of their own behavior is not necessarily accurate. The inconsistency could perhaps also reflect that other actions some participants *do* take were not represented in the survey. The question, however, brings to light the possibility that people may feel as though they are doing more than they actually are, or that they feel they *should* be doing more and therefore lie. More specific questions could get deeper into this inconsistency and perhaps find some answers.

5.3.2.1 Routine Behaviors

Three questions asked participants to identify the actions, from a list, that they have taken or routinely take, and to write the number of months since they began. The first question asked about having installed in their own home low-flow toilets, low-flow shower-heads or double-paned windows. Here again, I suggest that the results be analyzed in groups by length of time having worked in the building. About half of each group (and two-thirds of the 3-5 month group) answered that they had installed none of these products, and only one person had installed any since having begun work in the green building. [See Appendix D Survey Data for a complete presentation of the data.] Many LEED-certified buildings and green buildings in general have low-flow toilets, therefore making this one product that people could choose to install in their home as a direct result of their experience with it at work. However, it would be useful to more thoroughly explore people's attitudes and perceptions of these toilets. From anecdotal evidence, I recognize that some people have not had a favorable experience with this technology, which is just one example of the need to carefully assess correlations , especially when speculating on the direction of causations in this study.

A second question lists five commonly recycled materials (paper, glass bottles, aluminum or metal cans, plastics, and cardboard) and two products that are recyclable with some extra effort (batteries and electronics). Participants were asked to select those items they recycle any in their own home, and write for how many months they have recycled each [See Table 5.7 for a Summary.]

Table 5.7 Items Recycled in Own Home

Analysis Group	1-2.5 mo.	3-5 mo.	6-10 mo.	16-30 mo.
Recycle none	1	3	4	1
Recycle all but 2*	6	6	2	2
Recycle all but 1	1 (not batteries)	2 (not electronics)	-	2 (1 not batteries, 1 not electronics)
Recycle all	-	2	1	-
Begun since working in green building	1	1	-	2
No time written	-	2	-	1

*Recycled all but batteries and electronics

Many LEED buildings provide paper recycling for tenants, so a person who begins recycling after beginning work in the LEED building could have been influenced by their experience of recycling at work. The other materials listed most likely are not able to be offered for recycling at the building, and would therefore demonstrate the transference of the person's willingness to recycle paper into a willingness to recycle other materials.

The third question about the participant's behavior listed products used routinely and actions taken routinely, all of which are fairly common lifestyle choices that people make to live a more sustainable lifestyle. Some behaviors such as using compact fluorescent light bulbs and buying organic food have recently received much press,

which may affect the number of people who take that action. Others, such as composting food scraps, have not received much press, but require some extra effort and therefore signify one's deeper commitment to making his or her lifestyle more sustainable, while not undertaking a major lifestyle change. Walking, biking or taking public transportation instead of driving may signify a person's willingness to make major lifestyle changes. However, only one of the behaviors listed in this question (using compact fluorescent light bulbs) is directly related to attributes or products a person would have experience in a green building. A correlation between these actions and the nature of the person's experience with a green building is an important part of a demonstration that green buildings may have the ability to influence a person's behavior spatially and temporally separate from the building itself. The data from the pilot survey are summarized below in Table 5.8, showing that the most commonly performed actions are two which have been heavily emphasized recently in the main-stream media as well as in popular culture: changing one's light bulbs to compact fluorescents and buying organic food.

Table 5.8 Behavior Not Directly Related to Green Buildings – All surveys

Sustainable Product/Activity	Percent*
Use sustainable cleaning supplies	36
Use sustainable bug killer	30
Compact fluorescent Light Bulbs	58
High mpg or alternatively fueled vehicle	12
Compost food and/or yard waste	15
Walk or bike as alternative to driving	15
Public transit as alternative to driving	6
Take reusable bag to store	18
Buy organic food	48
Contribute money to environmental group	9

* Percentage of participants who do this regularly. Percentage does not add to 100 because participants checked multiple items.

About one-third of participants appear to be using cleaning supplies and bug killers that are less harmful to the environment. A small percentage (around 15-18) appear to compost, walk or bike, and/or take a reusable bag to the store. A very small number of individuals (2, 3, and 4, respectively) take public transit, contribute money to environmental organizations, and drive a high mile-per-gallon or alternatively fueled vehicle. When the participants' responses are analyzed in groups of the amount of time participants have worked in the building, it is easy to denote how many in each group have begun taking new actions since beginning work in the green building. [See Table 5.9 below.] The data can then be compared to see whether the length of time a person has worked in the building correlates to the number of people who have incorporated new sustainable behaviors into their lives. Of course, variables other than how long a person is employed in the green building could very well affect the influence that the building could have on the person. This analysis, however focuses on the single

variable of time, enabling one to isolate direct correlations, in an effort to sort through relationships which would enable future research to identify possible causal relationships.

Table 5.9 Behavior Not Directly Related to Green Buildings – By Time in Building

Sustainable Product/Activity	Number of People per Time Group			
	1-2.5 mo.	3-5 mo.	6-10 mo.	16-30 mo.
Total in group	8	13	7	5
Use sustainable cleaning supplies	2	5	3 (2*)	2 (1*)
Use sustainable bug killer	-	5 (1*)	2	1
Compact fluorescent Light Bulbs	4	8 (1*)	5 (1*)	4 (1*)
High mpg or alternatively fueled vehicle	3	1	-	-
Compost food and/or yard waste	3	1	-	1
Walk or bike as alternative to driving	2	3	-	-
Public transit as alternative to driving	-	2	-	-
Take reusable bag to store	3 (1*)	3	-	2
Buy organic food	4 (1*)	7	2	3 (1*)
Contribute money - environmental group	-	2	-	1
None	-	3	-	-

* Number of participants who began this action subsequent to beginning work in green building.

The data from the pilot survey seems to indicate that time does not correlate strongly with a person’s decision to incorporate more sustainable behavior into his or her lifestyle. A more thorough investigation however might come to different conclusions.

5.3.3 Purchasing Decisions and Values

Although a few of the pilot survey’s questions approach the topic of personal purchasing behavior by asking about products one has purchased (compact fluorescent light bulbs, cleaning supplies and bug eradicators) Some questions deal with topics specifically related to one’s purchasing decisions and attitudes. Participants are first

asked the frequency that they “purchase eco-friendly products or brands when they cost more than regular products or brands”, and then asked about their perceived behavioral control in affecting the environment through their purchasing decisions and the importance they personally place on value-based purchasing decisions.

As a whole, the pilot survey participants showed a lack of extreme variance in the frequency that they buy eco-friendly products that cost more than other products or brands. On a 5-point scale, exactly half of the participants chose the middle “occasionally” (3), and a fairly equal eight people and nine people chose “rarely” (2) and “frequently” (4), respectively. No one “never” nor “always” chooses to purchase more-sustainable products regardless of the price. [See table 5.10.]

Table 5.10 Frequency One Purchases Eco-Friendly Products Despite a Higher Price

Answers	Number (33 Total)	Percent
1 Never	-	-
2 Rarely	8	25
3 Occasionally	16	49
4 Often	9	27
5 Always	-	-

This question’s data is useful, first of all, in comparing purchasing behavior of LEED building employees to that of the national population. A national poll recently asked a similar question: which products had the participant “chosen to buy because they were better for the environment, even though they cost more?” Two polls conducted six months apart revealed almost the exact spread of results, confirming the accuracy by which it represents the nation’s purchasing habits. Table 5.11 compares the data from these polls to the pilot survey’s data, establishing that these LEED

building employees may differ from the greater population in their purchasing decisions to spend money more often on eco-friendly products despite the price.

Table 5.11 Frequency One Purchases Eco-Friendly Products Despite a Higher Price – Comparison Between National Poll and LEED Survey

In the past year, have you chosen to buy any specific products because they were better for the environment, even though they cost more?			How often do you purchase eco-friendly products or brands when they cost more than regular products or brands?	
National Poll Answers	CBS/NY Times April 2007	CBS/NY Times Oct 2007	LEED Pilot Survey Answers	LEED Survey
Named a product	43	45	Always	-
Nothing	45	44	Often	27
Don't know/	12	10	Occasionally	49
No answer			Rarely	25
			Never	-

Based on the theoretical model, I expected to see at least a correlation between the reported frequency that a person purchases eco-friendly products and services despite a higher price, and the degree that the person thinks their spending habits “have an effect on the market and contribute to environmental activism to protect the environment.” That was not the case. Although overall the data seems to support the expectation that these LEED building employees might reflect a stronger conviction that their purchasing decisions really *do* affect the economy and the environment [See Table 5.12], the correlation appeared weaker when each survey was analyzed as a case study [See Table 5.13].

Table 5.12 LEED Survey- Degree That Spending Affects Economy and Environment Compared to Frequency of Purchasing Eco-Friendly Products

To what degree do you think your spending habits have an effect on the market and contribute to environmental activism to protect the environment?			How often do you purchase eco-friendly products or brands when they cost more than regular products or brands?		
Answers	Number (33 Total)	Percent	Answers	Number (33 Total)	Percent
5 Major impact	-	-	1 Never	-	-
4 Considerable impact	9	27	2 Rarely	8	25
3 Small impact	21	64	3 Occasionally	16	49
2 Almost no impact	3	9	4 Often	9	27
1 No impact	-	-	5 Always	-	-

Analyzed as case studies, a pattern began to emerge between these two variables and the following two questions of the personal importance one feels either for “choosing products for political, ethical or environmental reasons”, or for participating in “political activism including things like voting, signing petitions, and financially contributing to a politically-active organization.” Especially for seven of the nine participants who “often” (4) buy sustainable products despite a higher price, and answered that their spending habits only have a “small impact” (3), they also answered a “5” or higher importance for their value of ethically, environmentally or politically motivated purchasing decisions, *or* “5” or higher for their value of political participation, or “5” for higher for both. [See Table 5.13 (which presents the three answers together for each of the nine) and Appendix D for complete data on all three questions.] One person who even ranked the impact of their spending on the market and the environment at “almost no impact” (2) but said they “often” (4) buy sustainable products despite the higher price, and highly valued making purchasing decisions for

political, ethical, or environmental reasons (6) and highly valued political participation (7). Although these relationships are clearly based on the answers of merely seven participants, the relationship merits more research, especially due to the casual circumstance in which the nature of the relationship became apparent. The pattern here could be alluding to an influence of the social norms that these people adhere to, which value political participation and value-based intentional economic decisions despite any evidence that may contradict the worth of these actions.

Table 5.13 Relationships Between Purchasing Behavior and the Value of Intentional Engagement

Degree Purchases Affect Economy or Environment	Purchasing Frequency	Importance of Value-Based Purchases	Importance of Political Participation
3	4	5	1
3	4	5	4
3	4	5	5
3	4	5	5
3	4	5	5
4	4	5	5
3	4	5	7
2	4	6	7
3	4	6	7

None of the other groups of answer patterns correlated as strongly as this, though conclusive evidence of the specific causal relationship between these variables requires much more data and more specific questions than are asked in the pilot survey. Though causal relationships cannot be inferred from this meager correlation, it brings to light the possibility that factors other than one's efficacy in protecting the environment through his or her purchases, may strongly influence a person's purchasing behavior.

According to the theoretical model developed in Chapter 3, U.S. consumers in a capitalistic economy have the responsibility to be informed consumers, and have the ability to counteract market imperfections through well-informed, intentional purchasing decisions. It appears that some Americans do take this responsibility seriously, though not all. The questions this survey seeks to empirically answer is how green buildings might affect people's purchasing habits, and then, how might green buildings be affecting the other economic factors that could result from a large-scale change in people's purchasing behavior? To better distinguish the relationships between the variables, more extensive surveys would need to address people's motives for their purchasing decisions, in addition to the questions that seek to understand how green buildings affect these motives.

5.3.4 Political Behavior and Beliefs

The pilot survey addresses two facets of citizen participation in politics: participation in general (or lack thereof), and the issues that these people, having experience with green buildings, might specifically choose to take an interest in and become engaged.

5.3.4.1 Importance of Being Politically Active

Ajzen's theory of the factors that influence behavior asserts that one's behavioral beliefs "produce a favorable or unfavorable attitude toward behavior", affecting one's decision to take action (2002, 665). The pilot survey, therefore, asks participants "how important it is to you to participate in political activism", as an indication of the person's general tendency to be politically active. Coupled with other

factors such as the person’s perceived behavioral control, and subjective norms, a person’s attitude toward certain behaviors can indicate the way a person might act.

Table 5.14 Importance of Political Participation

How important is it to you to participate in political activism, including things like voting, signing petitions, and financially contributing to politically-active organizations?	
Answer	Percent
7 Very important	12%
6	12
5	30
4	21
3	15
2	6
1 Not at all important	1

Participants in the pilot survey seemed to have a fairly even spread across the seven-point rating system, with an average rate of 4.5. [See Table 5.14.] It does not appear that participants in general are exceptionally likely to engage in politics, but a little more than half of the participants believe that taking political actions such as voting, signing petitions, and financially contributing to a politically active organization are of more than average importance (rating of 5-7). This question asks about the participant’s value for taking part in the political processes that shape society. However, to gage how that person might actually involve himself or herself personally in the political realm, a more thorough investigation must decipher whether that value translates into action.

5.3.4.2 Economic Growth versus Environmental Protection

Recently LEED buildings have begun to demonstrate how buildings can be constructed more environmentally sustainable without a substantially more-costly outlay. The ability to support environmental protection without compromising economically is a fairly new phenomenon that is still gaining recognition. In the past this seeming dichotomy between environmental protection and economic vitality has meant a weaker commitment to environmental protection. Since LEED buildings have taken an explicit role in proving the falsity of this dichotomy, do people who interact with LEED buildings share this conception? It is partly a knowledge-based understanding of the expenses and savings of a LEED building that would convince a person that environmental protection and a level of sustainability in general could possibly be attained without adverse economic consequences. The conception of the dichotomy's falsity might also be unconsciously understood through cultural norms and general social attitudes without an explicit understanding of the numbers. These speculations, however, have yet to be proven empirically.

The pilot survey tested here asked participants whether, in general, they “think improving the environment conflicts with economic growth.” A 55 percent majority answered that the two conflict some of the time, about a quarter of participants answered the median “Don’t know,” and just under another 20 percent answered that the two “conflict most of the time”. [See Table 5.15]

Table 5.15 Whether Improving Environment Conflicts With Economic Growth

<p>Generally speaking, do you think improving the environment conflicts with economic growth, or do you think improving the environment does not have to conflict with economic growth?</p> <p>- Los Angeles Times / Bloomberg August 2006</p>			
National Poll Answers	National Poll	LEED Answers	LEED Survey
Conflicts always	4 %	Always conflicts	0
Conflicts most of the time	9	Conflicts most of the time	18
Conflicts some of the time	11	Don't know	24
Does not have to conflict	70	Conflicts some of the time	55
Don't know	5	Never conflicts	3

Small discrepancies in the difference of word choice and between answer options make any direct comparison between this pilot survey and this national poll data tricky. I will not waste time explaining the nuances of the differences here, however I focus on the characteristics of the national poll which can be used to improve the clarity of the survey. An answer of “does not have to conflict” seems valuable in representing the sentiments of participants who believe that the two do often conflict the way laws and other variable currently interact, but believe that a few changes would enable us to pursue environmental sustainability without the threat of economic distress. Additionally, the differences between the answer choices would have been easier to recognize if answers had been presented in a different order. For example, if the “don't know” option was either at the end or the beginning, separating it from the gradients of the other answers, with a more grammatically clear middle choice. Undoubtedly, these issues with the answer choices in the pilot survey caused some confusion for participants, or at least left too much room for interpretation to be reliable. Also, the

question could gain more insightful additional data by including an answer that recognizes that even if there are costs to be incurred with environmental protection, the costs are well worth the benefits. In sum, this question has the potential to address participants' beliefs about the feasibility of sustainability in general, and the feasibility of making their own lives more sustainable.

This is one variable that green buildings seem directly capable of affecting because it is a space where people can interact with, become familiar with, and test-out the possibility of incorporating sustainable technologies into their own life. Green buildings incorporate many different types of technologies and systems having to do with a sustainable lifestyle (from the Xeriscaping on the grounds, to the low-VOC paints and recycled-glass floor) that are meant to be used by the people in the space, which is a perfect way for people to become acquainted with the ways that one's lifestyle can become more sustainable.

5.4 Summation

As people become more familiar with the ecological as well as economical benefits of green buildings, their conception of the possibilities for living sustainably with modern comfort and little inconvenience could affect their attitudes toward living sustainably and in effect, influence changes in their behavior. People may be more politically supportive of green building enticements or even mandates, perhaps even supporting more stringent regulations for environmental protection. As they realize the ways that environmental protection can be accomplished without compromising the health of the economy.

CHAPTER 6

CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

6.1 Summary and Conclusions of the Theoretical Model

The idea that the built environment can influence people's behavior is not new. Also, the construction knowledge to built dwellings that work with the natural environment to be efficient and the least environmentally destructive is thousands of years old. Yet it is just recently that the two of these have begun to intersect in a way that could transform the standards of the built environment around the world. The increasing popularity of the LEED standard of building construction, and of 'green' products and services in general almost guarantee that sustainability will only grow in its significance in our lives. The experiences that people are having with green buildings, and the ways that green buildings are influencing their ideas could result in consequences that could affect society. The purpose of this study is to build a theoretical framework in which to explore the possibility that peoples' experiences with green buildings could result in some possibly unintended, even seemingly unrelated, changes in peoples' behavior.

6.1.1 Behavior

There is a disconnection between attitude and behavior. In other words, one's attitude about a subject will not necessarily determine his or her actions. This point is perfectly apparent when looking at the lifestyle decisions and behavior of people who

appear to show concern for environmental sustainability. Research has revealed that American attitudes toward the environment are favorable to environmental protection, to spending the extra money to purchase environmentally sustainable products, and to using their political power to bring about environmental political change. However, people's actions are not necessarily reflecting these attitudes, and some people cannot even explain why, themselves. Half of Americans seem to think they are already doing a good job protecting the environment. How can people who are concerned about the environment not feel compelled to act on that concern? This exemplifies the type of disconnect between attitudes and values, and behavior that is under scrutiny in this study.

The study also intends to explore whether green buildings may influence people in a way that helps bridge the gap between attitudes and behavior. Green buildings bring the issue of environmentally sustainable living to the personal level, demonstrating how the built environment can be more sustainable and how a person can live a more sustainable lifestyle. They demonstrate that the sustainable lifestyle does not have to be expensive, difficult, or result in a lower standard of living. In fact, green buildings can promote an even higher standard of living, being better lit by using daylight, electrically independent by using sun or wind energy generated on-site, and more comfortable by using design characteristics to naturally heat and cool the building. If people see that a green building do not necessarily compromise their standard of living, the quality of their life, or their lifestyle financing, they may be more inclined to try more-sustainable products or practices in their own lives.

Research on physical determinism gets the closest to directly informing whether a built environment can affect people in this way. Physical determinism, however, has focused on the direct effects of the built environment on a person's immediate awareness and resulting behavior in the space, while this study is exploring whether a built environment can influence people in a way that affects their behavior over time, in spaces other than the building itself.

Green buildings *have* proven to influence people's behavior. For example, academic performance in green schools and worker productivity in green office buildings are a testament to the influence that a green building can have on a person's behavior. However, this study calls for more research on some of the more indirect ways that buildings could be affecting people's lifestyle choices, purchasing behavior and political behavior.

This study presents a theoretical model in which psychological research on the factors that influence behavior form the basis for determining how a building could influence seemingly unrelated behaviors.

The core factors considered here to influence one's behavior are from Ajzen's (2006) Theory of Planned Behavior. He identifies *norms*, *perceived behavioral control*, and *intention* as the factors that influence one's behavior. In addition, Leon Festinger's Theory of Cognitive Dissonance is exceptionally relevant to understanding the incongruity between peoples' attitudes toward the environment and their unsustainable lifestyle choices, explaining how this dissonance is sometimes resolved by a change in behavior (Cooper 2007).

6.1.2 Knowledge

People seem to be wary of the way their life may change if forced to live more sustainably, often expressing that “there is something about the whole prospect of changing our patterns of consumption and behavior that sounds uncomfortably close to compromising our quality of life” (Jones 1996, 57). Green buildings remove some of that uncertainty by providing the opportunity for people to experience first-hand how their lifestyle may and may not change if they decide to implement sustainable practices or products into their lives.

In this way, the knowledge one gains about the green building and the tenants of sustainability is an important part of one’s experience of working in the building. Through peoples’ personal experiences with green buildings technologies, their awareness may broaden to include technologies and behaviors that would make their lifestyle more efficient and less expensive, all while setting a higher standard of living. This possibility that green buildings can, in a sense, “teach” people how they can live more sustainably partly forms the basis for the following chapters’ exploration of how green buildings may influence changes in people’s purchasing behavior or political behavior.

6.1.3 Purchasing Decisions

As citizens in a capitalistic economy, U.S. consumers have the responsibility to be informed consumers, and have the ability to counteract market imperfections through well-informed, intentional purchasing decisions. However, one serious flaw in this expectation is that consumers often are not well-informed about products or about the

production practices they are supporting by purchasing a specific product or service. How can a person who wants to make environmentally responsible decisions choose not to contribute to these harmful consequences without knowledge of how s/he is contributing to the problem? Intentional purchasing decisions by knowledgeable consumers may be able to, for example, make up for the misvaluation of goods by paying more money for a sustainable product, essentially decreasing the externalized costs of unsustainable products. Whether or not consumers are consciously banding together to increase the demand for certain products, such as organic food, the deliberate decisions by hundreds or millions of people to begin purchasing more of a certain product can be seen as collective action in the market. Collective action in this sense can be an affective tactic for flexing consumer power in the market. It is the consumer's responsibility to make informed decisions about their purchases, not only to uphold the integrity of the market system itself, but also to protect the natural environment.

Even seemingly less-significant individual actions and purchasing decisions (such as purchasing bed sheets made from organic, sustainably-harvested, and quick-growing trees) can have an impact on the market, especially when many individuals decide that making intentionally sustainable purchasing decisions are essential and commit to purchasing sustainable products, regardless of a higher price. Although it is impossible to buy a product that has not been made, people's action to avoid buying product that have been made unsustainably can be a driving force for innovation, for product standards, and for industry production standards.

6.1.3.1 Green Buildings and Purchasing Decisions

This study explores the possibility that people's purchasing habits could change as a result of their interaction with a green building. As people begin to realize how inexpensive, efficient, and comfortable a sustainable lifestyle can be, they may begin looking for ways to make their own lifestyle more sustainable. Especially for people who already incorporate some environmentally sustainable practices in their life, their experience with a green building may augment their desire to live sustainably or expand their knowledge of products and practices they can incorporate into their lifestyle. A person may even begin to seek additional ways to make his or her lifestyle more sustainable, such as composting food scraps or buying an alternatively fueled vehicle.

People purchasing sustainably developed products and services with more frequency could create a variety of responses such as a collective increase in support of the suppliers of sustainable goods and services, and/or more products and services offered, more competition for people's money and lower prices for sustainable goods and services. This would be true especially if green buildings do prove to influence peoples' behavior in a way that changes the purchasing decisions that have little or nothing to do with the building directly, but with living sustainably in general, such as the decision to buy a hybrid car.

Although these actions have yet to be proven as direct consequences of a person's experience with a green building, further research could identify whether people who have experience with green buildings tend to incorporate into their lives sustainable practices that are not explicitly demonstrated in a green building.

The study questions whether green buildings could affect people in a way that is less direct than the way physical determinism has conceptualized the connections, for example, the way a high illumination level in a parking lot deters crime (United States Department of Justice 1996). Specifically, if people see that a green building do not necessarily compromise their standard of living, the quality of their life, or their lifestyle financing, might they be more inclined to try sustainable products or practices in their own lives? Individuals who connect their purchasing behavior to their ecological values become a potent source for change in society at large.

6.1.4 Political Support

People's behavior regarding environmental policy is the other type of change in behavior which this study explores as a possible consequence of peoples' interaction with green buildings. The passive power of the consumer pales in comparison to the active power of the politically engaged citizen.

For those who are politically active, experience with a green building may influence support for policies that encourage sustainable practices. Endeavors to create policies such as national and local standards for newly constructed buildings to be built sustainably may be better received by the public, and possibly even prompted by public support.

Depending on many factors, people's experiences with green buildings could even reflect an increased motivation to be politically active in general, especially on issues related to environmental sustainability. It is possible that experience with a green building, knowledge of its performance, and personal knowledge of the principles of

sustainability could be a catalyst for political engagement, and that as informed citizens, these people could regain a sense of power from the experts who currently have major influence in politics. Similar to the way Zukin (2006) concludes that a person's civic involvement may lead to political engagement, I wonder if a person's experience with green buildings and change in sustainable behavior might lead to an increase in political support for laws and standards which would make society more sustainable, and support for stricter environmental regulations in general.

My theoretical speculations are mostly hypothetical, but even if people's behavior is not influenced exactly the way this theoretical model proposes, people's political involvement has the potential to positively affect the politics of creating a sustainable built environment and a sustainable society, and protecting the natural environment.

Although it may seem like a stretch to suppose that green buildings might influence people's desire to protect the environment, it appears that people may be more supportive of environmental protection if they know it will not compromise the health of the economy.

What, then, could this mean for the effects that widespread changes in behavior could have on society in general? Fischer (2003) speculates that the dynamics of policy formation itself may evolve, as citizens reclaim their ability to be knowledgeable about environmental issues. Dobson and Bell (2006) describe a "sustainable citizenship" where citizens actively participate in changing the economic and social structures that have created environmental problems (23-24). Paehlke (2000) agrees, stating that

widely shared ideas and values “can provoke a strong political response” and can even have the weight to bring a new political agenda to light (80). Even if green buildings do not affect people’s behavior the way this theoretical model suggests, the increasing attention on issues of environmental sustainability may similarly affect people’s political behavior.

6.1.5 Survey

The purpose of the survey component of this study is to explore how future research might be able to verify some of the relationships identified in previous chapters between green buildings and people’s behavior. The purpose is also to test how best to go about empirically verifying the relationships discussed in this theoretical framework.

Much remains to be discovered about the reasons for change in environmental attitudes and activism. The following section presents suggestions for future research to develop the empirical evidence necessary to fill-in the gaps and further develop the theoretical model presented here.

6.2 Suggestions for Future Research

Research in the field of attitude-behavior relationships has the potential to add significantly to this theoretical model in which green buildings influence people to make changes in their lifestyle and behavior. Hopefully, research on green buildings will soon begin to include exploration of the possibility of green buildings as an avenue of influence on social change. The topics identified below deserve further investigation to evaluate their role in illuminating what influence green buildings may have on people, and how their behavioral decisions are in turn affected.

This study is built around the investigation of two questions: how might green buildings affect people's behavior; and how might people's experiences with green buildings be reflected in a change of their purchasing decisions or political behavior? Research reveals that there are still some basic relationships to clarify, such as: the specific kinds of experiences that influence a person to take environmentally sustainable actions, and the kinds of actions a person might take as a consequence of his/her experience with green buildings. The possibility is evident though, that people's experience with the green building could provide a necessary component to connect people's concern for the natural environment to the changes in behavior necessary to ensure environmental sustainability. In other words, sustainably built buildings might be a catalyst in the built environment that stimulates, and helps create the means for a surge in environmentally responsible purchasing decisions and political behavior.

Ultimately, it will prove important to more-fully understand which (and how) environmentally sustainable behaviors relate to one another, noting that some environmentally beneficial behaviors are conceptually related while others are completely separate (Jones 1996, 63).

Future research needs to also address whether a person's knowledge of the building or of the reasons for its different design attributes and technologies has any correlation with their behavior or attitudes. People's motives for their behavioral decisions, as well as how green buildings may influence these motives need to be better understood. Ambiguity of the relationships between variables, and inconsistency in data results does nothing to further develop any theoretical model. This survey, for

instance, asked about people's attitudes toward the environment in two slightly different questions, and received noticeably different responses from each. Therefore, a more explicit understanding of the reasons why a difference exists between their concern for the present state and for the future state of the environment could be very informative in understanding how people perceive the environment, and the construction of their motivation to take actions that preserve environmental integrity.

In addition, it would be useful to contextualize future data with information about participants' life circumstances. For example, asking a person whether s/he recycles will result in only a partial picture of what the questions really serves to identify. Perhaps, for example, the person would recycle if the apartment complex where he or she lives offered the service. Data that leaves out a nuance such as this could miss some significantly pivotal relationship. More contextual information would help clarify the motives, and decision-making processes that connect attitude to behavior. Research that can clarify people's attitudes and perceptions will also be crucial in furthering understanding of these relationships.

The relationship between the building components and technologies that are unique to sustainable buildings and the people who use them could be a pivotal relationship that would influence a person's desire to live a more sustainable lifestyle. For example, a person's perceptions of components such as automatic lights, waterless urinals, and permeable pavement could influence their conception of the practicability of trying to live an environmentally sustainable lifestyle. It would also be useful to have more data that directly inquires into people's knowledge of, and perceptions and

attitudes about sustainability in general. A person's knowledge about the issues surrounding environmental sustainability, and the reasons for specific building attributes could be researched in more depth to determine how people's attitudes could be influencing their behavior, and even how the building could be influencing those attitudes.

Lastly, further research on this topic should ask participants about their perceptions of personal behavioral control and efficacy. Are consumers aware of their individual power to collectively influence how their purchasing decisions are affecting the natural environment? Do they even feel they can effectively address environmental problems with their purchasing decisions? Will people take advantage of the opportunities they have to make society more environmentally sustainable? These may not be questions that can be put on a survey to ask people directly, but they are questions that merit further research because of their implications in influencing behavior.

As some of these questions begin to be answered, larger questions will no doubt arise. The imperative of living sustainably is expected only to become more ubiquitous our lives, where not only buildings will be green, but entire cities will be redeveloping to higher standards of environmental sustainability. If buildings can affect people's perceptions, lifestyle decisions, and behavior, vast changes in the urban landscape are bound to have an even more-dramatic influence on people. As social norms and behaviors change and our built environment becomes more sustainable, perhaps it will become easier to conceive of the way an environmentally sustainable life would look.

APPENDIX A

NATIONAL POLL DATA

All survey questions listed here were accessed through the Polling the Nations database.

Source: ABC News/ Washington Post

Contact Information:

ABC News Polling Unit
7 West 66th Street, 7th Floor
New York, NY 10023
(212) 456-4934

Question: When you go shopping and you're deciding what to buy, do you consider the manufacturer's environmental record, or do you decide mainly on the basis of price and quality?

Date: Apr. 20, 2007

Results:

consider record	11%
price and quality	79
neither (vol.)	2
both (vol.)	7
no opinion	1

Field Date - Apr 5-10, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,002

Question: When you decide where to shop, do you consider the store's environmental policies, or do you decide mainly on the basis of other factors, such as convenience, prices and brands?

Date: Apr. 20, 2007

Results:

consider record	8%
consider other factors	87
both (vol.)	5
no opinion	1

Field Date - Apr 5-10, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,002

Question: Would you support or oppose a law in your area requiring low-flow showerheads?

Date: Apr. 20, 2007

Results:

support	59%
oppose	36
already required (vol.)	1
no opinion	4

Field Date - Apr 5-10, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,002

Question: Would you support or oppose a law in your area requiring all newly installed toilets to be low-volume toilets?

Date: Apr. 20, 2007

Results:

support	71%
oppose	24
already required (vol.)	3
no opinion	2

Field Date - Apr 5-10, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,002

Question: How much do you trust the things that scientists say about the environment: completely, a lot, a moderate amount, a little, or not at all?

Date: Apr. 20, 2007

Results:

completely	5%
a lot	27
moderate amount	43
little	19
not at all	5
no opinion	1

Field Date - Apr 5-10, 2007

Universe: Country: United States
Method: telephone
Sample Size: 1,002

Source: USA Today/ Gallup

Contact Information:

Roper Center for Public Opinion Research
341 Mansfield Road
Storrs, CT 06269-1164
(860) 486-4440
fax (860) 486-6308

Question: How important should the environmental record of a company be when people make buying decisions?

Date: Apr. 19, 2007

Results:

most important	13%
important	70
not at all	15
no opinion	2

Field Date - Mar 23-25, 2007

Universe: Country: United States
Method: telephone
Sample Size: 1007

Source: CBS News/ New York Times Poll

Contact Information:

CBS News
524 West 57th Street
New York, NY 10019
(212) 975-5551

Question: Often there are trade-offs or sacrifices people must make in deciding what is important to them. Generally speaking, when a trade-off has to be made, which is more important to you -- stimulating the economy or protecting the environment?

Date: Apr. 27, 2007

Results:

economy	36%
environment	52
both (vol.)	8
don't know/ no answer	4

Field Date - Apr 20-24, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,052

Question: In the past year, have you chosen to buy any specific products because they were better for the environment, even though they cost more?

Date: Oct. 15, 2006

Results:

	total
car/ hybrid/ fuel efficient	8%
bike/ scooter/ alternative	1
household products	22
food items - organic foods	6
home improvement/ energy	8
other	1
no/ nothing	44
don't know/ no answer	10

Field Date - Sep 15-19, 2006

Universe: Country: United States

Method: telephone

Sample Size: 1,131

Question: Do you buy products made from recycled materials regularly, or is that something you do occasionally, or is buying products made from recycled material something you do not do?

Date: Apr. 27, 2007

Results:

regularly	41%
occasionally	49
don't do	8
don't know/ no answer	1

Field Date - Apr 20-24, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,052

Question: Do you agree or disagree with the following statement: Protecting the environment is so important that requirements and standards cannot be too high and continuing environmental improvements must be made regardless of cost.

Date: Nov. 1, 2006

Results:

	total
agree	63%
disagree	33
don't know/ no answer	4

Field Date - Oct 27-31, 2006

Universe: Country: United States

Method: telephone

Sample Size: 1084

Question: When political leaders talk about problems facing the environment, do you think they are being generally helpful or generally confusing?

Source: CBS News/ New York Times Poll

Date: Apr. 27, 2007

Results:

helpful	23%
confusing	72
don't know/ no answer	5

Field Date - Apr 20-24, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1,052

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Source: Pew Research Center

Contact Information:

Pew Research Center for the People and the Press

1615 L Street, NW

Suite 700

Washington, DC 20036

(202) 419-4400

fax (202) 419-4399

Question: Which comes closer to your view - stricter environmental laws and regulations cost too many jobs and hurt the economy or stricter environmental laws and regulations are worth the cost?

Date: Aug. 24, 2006

Results:

cost jobs and hurt economy	31%
worth the cost	57
neither/ both equally/ don't know	12

Field Date - Jul 6-19, 2006

Universe: Country: United States

Method: telephone

Question: I'm going to read you some pairs of statements that will help us understand how you feel about a number of things. As I read each pair, tell me whether the first statement or the second statement comes closer to your own views - even if neither is exactly right. Stricter environmental laws and regulations cost too many jobs and hurt the economy; stricter environmental laws and regulations are worth the cost.

Date: Mar. 30, 2006

Results:

	total	Chicago	Las Vegas	Phoenix
cost jobs and hurt economy	29%	25%	30%	29%
worth the cost	65	69	64	65
neither/both equal/don't know	6	6	6	6

Field Date - Feb 8-Mar 7, 2006

Universe: Country: United States

Method: telephone

Sample Size: 6003

Question: As I name some issues that are in the news these days, please tell me how important the issue is to you personally. Is environmental policy an issue that is very important, somewhat important, not too important, or not at all important to you?

Date: Jun. 27, 2006

Results:

very important	52%
somewhat important	36
not too important	8
not at all important	3
don't know/ refused	1

Field Date - Jun 14-19, 2006

Universe: Country: United States

Method: telephone

Sample Size: 1501

Copyright Info: The Pew Research Center for the People and the Press

Notes: based on 588 Form 1 registered voters

Source: Greenberg Quinlan Rosner Research

Contact Information: Greenberg Quinlan Rosner Research
10 G Street, NE
Suite 400
Washington, DC 20002
(202) 478-8300
fax (202) 478-8301

Question: Please read the pairs of statements below. For each, please say which statement comes closer to your own views, even if neither is exactly right. We need to protect the environment, even if it means more taxes or losing a few jobs; or we need to protect the environment, but not at the cost of higher taxes or jobs.

Date: Jan. 2006

Results:

protect at all costs, feel strongly	21%
protect at all costs, not strongly	25
protect but not at all costs, feel not strongly	28
protect but not at all costs, strongly	26

Field Date - Dec 8-13, 2005

Universe: Country: United States

Method: telephone

Sample Size: 1,195

Additional Information: Survey consisted of adults 18-24 years of age.

Source: American Association of Retired Persons

Contact Information: AARP
Public Policy Institute
601 E Street, NW
Washington, DC 20049
1-888-687-2277

Question: Listed below are some things that affect some people's quality of life. For each item below, please indicate how important it is to you personally with regard to your own quality of life. How important to you is being productive, contributing to your community and society?

Date: May 2005

Results:

		total
refused		1%
very important	5	33
	4	43
	3	20
	2	4
not important	1	1

Field Date - Mar 17-Apr 14, 2004

Universe: Country: United States

Method: telephone

Sample Size: 1682

Source: Harris Interactive

Contact Information: Harris Interactive

135 Corporate Woods

Rochester, NY 14623-1457

Question: Individual social responsibility index -- percentage of adults that believe social responsibility is extremely important (practice what you preach); those who believe that social responsibility is a good idea and do what they can (good intentions); and those for whom social responsibility has little consequence in their lives (to thine own self be true) -- by age, income, and education.

Date: Jun. 18, 2007

Results:

	practice what you preach	good intentions	to thine own self be true
total	8%	67%	25%
echo boomers - age 18-30	5	62	33
gen X - age 31-42	5	66	29
baby boomers - age 43-61	10	68	22
matures - age 62+ 11	71	17	

Field Date - May 8-14, 2007

Universe: Country: United States

Method: online

Notes: Three measures were used to gauge individuals' level of individual social

responsibility: first, attitudes or how important is it to be involved with community, civic and social causes; second behaviors, in particular how active people are with donating time or money to causes; and finally how much the individual takes into consideration a company's reputation for social responsibility when making purchasing decisions. From this, an index emerged.

Question: As you may know, people's attitudes differ very widely concerning how involved they want to be with community, civic, and social causes : including things like voluntary service, donating to charities, or getting involved in community activities. Which statement best describes your attitude about this subject: A person's main concern is to look out for his or her own interests not to be involved with social causes; or people can get involved with different issues and causes if they want to, but no one should feel obligated to do so; or people generally should take part in such things because it is the right thing to do; or people have personal responsibility to make the world a better place by being actively involved with various issues and causes.

Date: Jun. 18, 2007

Results:

look out for one's own interests	1%
not feel obligated to be involved	40
right thing to take part	19
personal responsibility to be involved	31
not sure	9

Field Date - May 8-14, 2007

Universe: Country: United States

Method: online

Question: Please tell me if you feel environmental groups have done more than their share, just about right, or less than their share to help reduce environmental problems?

Date: Oct. 13, 2005

Results:

less than their share	16%
about right	39
more than their share	42
not sure	2

Field Date - Aug 9-16, 2005

Universe: Country: United States

Method: telephone

Sample Size: 1217

Source: Democracy Corps

Contact Information:

Democracy Corps
Greenberg Quinlan Rosner Research
10 G Street, N.E. Suite 400
Washington, DC 20002
(202) 478-8330
fax (202) 289-8648

Question: Let me ask about a number of issues and how the government is handling each issue. For each one, please tell me whether you approve or disapprove of the way the government is handling the issue. The environment.

Date: Feb. 20, 2007

Results:

strongly approve	8%
somewhat approve	29
somewhat disapprove	22
strongly disapprove	37
don't know/ refused	4

Field Date - Feb 14-19, 2007

Universe: Country: United States

Method: telephone

Sample Size: 1014

Additional Information: likely voters

Notes: split sample asked of 507 Form A respondents

Source: ABC News

Contact Information:

ABC News Polling Unit
7 West 66th Street, 7th Floor
New York, NY 10023
(212) 456-4934

Question: Thinking about the way the US Congress is handling issues involving the natural environment, do you approve, disapprove, or neither approve nor disapprove?

Date: Mar. 26, 2006

Results:

strongly approve	4%
somewhat approve	11

neither	32
somewhat disapprove	22
strongly disapprove	31
no opinion	1

Field Date - Mar 9-14, 2006

Universe: Country: United States

Method: telephone

Sample Size: 1002

Question: During the next year, how much do you want the US Congress to do to help the natural environment - a great deal, a lot, a moderate amount, a little, or nothing?

Date: Mar. 26, 2006

Results:

great deal	49%
a lot	27
moderate amount	17
little	4
nothing	3

Field Date - Mar 9-14, 2006

Universe: Country: United States

Method: telephone

Sample Size: 1002

Question: How much do you trust the things that scientists say about the environment - completely, a lot, a moderate amount, a little, or not at all?

Date: Mar. 26, 2006

Results:

trust completely	5%
trust a lot	27
trust a moderate amount	41
trust a little	22
do not trust at all	5
no opinion	1

Field Date - Mar 9-14, 2006

Universe: Country: United States

Method: telephone

Sample Size: 1002

Source: NBC News/ Wall Street Journal

Contact Information: NBC News
1724 Connecticut Avenue N.W.
Washington, DC 20009
(202) 234-5570

Question: On a scale from 0 to 10, where “10” is “extremely important” and “0” is “not at all important” how important would you say the issue of stronger environmental regulations is to you?

Date: Mar. 10, 2004

Results:

extremely important	10	24%
	8-9	30
less important	0-7	45
cannot rate		1

Field Date - Mar 6-8, 2004

Universe: Country: United States

Method: telephone

Sample Size: 1018

APPENDIX B

COMPARING NATIONAL POLLS TO LEED EMPLOYEE SURVEYS

Source: Global Market Institute

Question: How concerned are you about the future of the environment?

Date: Jun. 5, 2007

Results:

In LEED buildings

very concerned	45%	45%
fairly concerned	39	36
not very concerned	12	18
not at all concerned	3	0
don't know/ not sure	1	0

Field Date - May 2007

Source: ABC News

Question: During the past year, how much did you think about the impact that you personally had on the natural environment - a great deal, a lot, a moderate amount, a little, or not at all?

Date: Mar. 26, 2006

Results:

In LEED buildings

a great deal	16%	always - 3%
a lot	20	often - 42%
moderate amount	35	sometimes- 45
little	22	barely any- 9
not at all	8	none- 0

Field Date - Mar 9-14, 2006

Question: How would you rate the condition of the environment in the world today -- that is, the overall condition and quality of the air, water, land, and wildlife -- is it excellent, good, fair, or poor?

Results:

CBS News/ NY Times Poll

ABC News/ Washington Post

Date: Apr. 27, 2007

Date: Apr. 20, 2007

In LEED buildings

excellent	1%	3	0
good	19	20	19
fair	49	41	39
poor	30	26	39
very poor		9	3
don't know/ no answer	1	<0.5	0

Field Date - Apr 20-24, 2007

Source: Los Angeles Times / Bloomberg

Question: Generally speaking, do you think improving the environment conflicts with economic growth, or do you think improving the environment does not have to conflict with economic growth?

Date: Aug. 3, 2006

Results:

In LEED buildings

	total		
conflicts always	4%		0%
conflicts most of the time	9		18%
conflicts some of the time	11		55%
does not have to conflict	70	never -	3% (one)
don't know	5		24% - reluctant to decidedly pick one.

Field Date - Jul 28 - Aug 1, 2006

Source: General Social Surveys

Question: There are different opinions as to what it takes to be a good citizen. As far as you are concerned personally on a scale of 1 to 7, where 1 is not at all important and 7 is very important, how important is it to choose products for political, ethical or environmental reasons, even if they cost a bit more?

Date: 2004

Results:

In LEED buildings

not important at all	1	111	4%		0
	2	51	2%		3%
	3	111	4%		6%
	4	261	9%		30% - neither/apathetic?
	5	382	13.5%		42%
	6	253	9%		12
very important	7	278	10%		0
can't choose	21		0.7%		0
not applicable	1340		48%		0

Question: In the past year, have you chosen to buy any specific products because they were better for the environment, even though they cost more?

Results:

	Source: CBS News/ N Y Times	CBS News/ NY Times	In LEED buildings:
	Date: Apr. 27, 2007	Oct. 2006	(how often)
Named specific kind of product	43%	46%	often (no 'always'): 27%
nothing	45	44	occasionally: 49%
don't know/ no answer	12	10	rarely (no 'never'): 25%

Source: Fox Broadcasting Company

Question: Do you think the benefits to the environment and money saved in lower electricity bills is enough to justify paying at least twice as much for a compact fluorescent light bulb as for a traditional light bulb?

Date: Jun. 14, 2007

Results:

In LEED buildings: (people who do buy)

total		
yes	59%	66% yes (21-2yr +, 15%-1-2yr, 3-11mo-15,15-no time)
no	29,	33% no
don't know	12	
Field Date - Jun 5-6, 2007		

APPENDIX C

SURVEY INSTRUMENT

1 How long have you worked in this building?

_____ years or _____ months

2 To your knowledge, has this building been certified as a green building? (Check one)

Yes No Don't know

3 Which of the following is a characteristic of this building or its grounds? (Check all that apply)

- Paper recycling
- Extensive use of sunlight for natural lighting
- Showers (for bicyclists)
- Xeriscaping (landscaping using native plants)
- Energy-efficient appliances
- Energy-efficient design
- Recycled, or regionally-available materials used for construction
- Low-emitting carpets, paints, and/or sealants used in construction

4 How have you been informed about this building? (Check all that apply)

- Pamphlets Signs Newspaper articles Conversations
- Movies Emails Other _____
- Have not received any educational information.

5 Has working in this building made you more environmentally sensitive or inspired you to changed your behavior? (Check one)

Yes No

If yes, how much? (Check one)

- | | | | | |
|--|--------------------------------------|--------------------------------------|---|-----------------------------|
| <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| Have made major changes in my life environment | Have changed a good number of things | Have changed a few things in my life | Have thought about making changes but haven't | Merely think about the more |

Now, a few questions about your own life at home. Remember, your answers are completely anonymous.

6 Have you installed any of the following products in your current home? If yes, how many months ago?

- | | Yes, in home. | This long ago. |
|------------------------------------|--------------------------|----------------|
| a. Low-flow shower-heads | <input type="checkbox"/> | _____ mo. |
| b. Low-flow toilets | <input type="checkbox"/> | _____ mo. |
| c. Double-paned windows | <input type="checkbox"/> | _____ mo. |

7 Do you recycle any of the following at home? If yes, for how long have you?

- | | Yes | For this many months. |
|--|--------------------------|-----------------------|
| a. Paper | <input type="checkbox"/> | _____ mo. |
| b. Glass bottles | <input type="checkbox"/> | _____ mo. |
| c. Aluminum or metal cans <input type="checkbox"/> | | _____ mo. |
| d. Plastics | <input type="checkbox"/> | _____ mo. |
| e. Cardboard | <input type="checkbox"/> | _____ mo. |
| f. Batteries | <input type="checkbox"/> | _____ mo. |
| g. Electronics <input type="checkbox"/> | | _____ mo. |

8 How often do you purchase eco-friendly products or brands when they cost more than regular products or brands? (Check one)

- | | | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| Always, regardless of price | Often | Occasionally | Rarely | |
| Never | | | | |

9 Do you regularly do any of the following? If yes, for how many months have you?

- | | Yes, I do. | For this many months. |
|---|--------------------------|-----------------------|
| a. Use environmentally friendly cleaning supplies . . . | <input type="checkbox"/> | _____ mo. |
| b. Use environmentally friendly bug killer | <input type="checkbox"/> | _____ mo. |
| c. Use compact fluorescent light bulbs | <input type="checkbox"/> | _____ mo. |
| d. Drive a high mpg or alternatively fueled vehicle . . . | <input type="checkbox"/> | _____ mo. |
| (e.g., hybrid, electric, natural gas, or biofuel) | | |
| e. Compost food and/or yard waste | <input type="checkbox"/> | _____ mo. |
| f. Walk/bike as an alternative to driving | <input type="checkbox"/> | _____ mo. |
| g. Take public transportation instead of driving . . . | <input type="checkbox"/> | _____ mo. |

- h. Take your own reusable bag to the store _____ mo.
- i. Buy organic food _____ mo.
- j. Contribute money to environmental groups such as
Sierra Club, Greenpeace, Audubon Society . . .
_____ mo.

10 To what degree do you think your spending habits (i.e., voting with your dollars) have an effect on the market, and contribute to environmental activism to protect the environment? (Check one)

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| Major impact | Considerable impact | Small impact | Almost no impact | No impact |

11 There are different opinions as to what it takes to be a good citizen. How important is it to you to choose products for political, ethical or environmental reasons, even if they cost a bit more? (Check one)

- | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------------------|
| <input type="checkbox"/> 7 | <input type="checkbox"/> 6 | <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 | |
| Very all important | | | | | | | Not at important |

12 How important is it to you to participate in political activism, including things like voting, signing petitions, & financially contributing to a politically-active organization?

- | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------------------|
| <input type="checkbox"/> 7 | <input type="checkbox"/> 6 | <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 | |
| Very all important | | | | | | | Not at important |

13 How would you rate the condition of the environment today -- that is, the overall condition and quality of the air, water, land, and wildlife? (Check one)

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| Excellent | Good | Fair | Poor | Very poor |

14 How concerned are you about the future of the environment? (Check one)

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| Very concerned | | | | Not at all concerned |

15 In general, do you think improving the environment conflicts with economic growth? (Check one)

- 5 Always conflicts 4 Conflicts most of the time 3 Don't know 2 Conflicts some of the time 1 Never conflicts

16 To what degree would you consider yourself an environmentalist? (Check one)

- 5 Die-hard 4 Substantial 3 Moderate 2 Barely 1 Couldn't care less

17 During the past year, how much have you thought about the impact that you personally have had on the natural environment? (Check one)

- 5 All the time 4 Often 3 Sometimes 2 Barely any 1 Not at all

I'd like to finish with a few questions about you. Please remember that your answers are completely anonymous.

18 Do you have any children or grandchildren? (Check 'None' or fill-in the blanks)

Children: None or Number _____ Ages _____

Grandchildren: None or Number _____ Ages _____

19 What is your highest level of education? (Check one)

- No high school diploma High school /GED Associates Degree
 Bachelors Degree Masters Degree JD/MD/PhD or other advanced degree

20 What is your annual household income? (Check one)

- Below \$30,000 \$30-60,000 \$60-100,000 Over \$100,000

APPENDIX D
SURVEY DATA

The following summarize the data from the 33 surveys, by question number.

1) How long have you worked in this building?

Results:

1-2.5 months: 8
3-5 months: 13
6-10 months: 7
16-30 months: 5

2) To your knowledge, has this building been certified as a green building?

Results:

Every person checked 'yes'.

3) Which of the following is a characteristic of this building or its grounds?
(Check all that apply)

- Paper recycling
- Extensive use of sunlight for natural lighting
- Showers (for bicyclists)
- Xeriscaping (landscaping using native plants)
- Energy-efficient appliances
- Energy-efficient design
- Recycled, or regionally-available materials used for construction
- Low-emitting carpets, paints, and/or sealants used in construction

Results:

Only 3 checked fewer than 6 of the 8 listed.
33 checked "Energy-efficient design"
32 checked "Extensive use of sunlight..."

4) How have you been informed about this building? (Check all that apply)

- Pamphlets Signs Newspaper articles Conversations
- Movies Emails Other _____
- Have not received any educational information.

Results:

Answer	Number	Percent
Pamphlet	24	73
Sign	15	45
Newspaper	16	48
Conversation	31	94
Movie	-	-
Email	12	36
Tour	7	21

5) Has working in this building made you more environmentally sensitive or inspired you to changed your behavior? *If yes, how much?*

Results:

Answer	Length of Time Working in Building			
	1-2.5 mo.	3-5 mo.	6-10 mo.	16-30 mo.
Yes, and:				
5 - Have made major changes in my life	1	0	0	0
4 - Have changed a good number of things	1	5	2	1
3 - Have changed a few things in my life	6	6	4	4
2 - Have thought about making changes but haven't	0	1	0	0
1 - Merely think about the environment more	0	0	0	0
No	0	1	1	0

6) Have you installed any of the following products in your current home? *If yes, how many months ago?*

- a. Low-flow shower-heads
- b. Low-flow toilets
- c. Double-paned windows

Results:

1-2.5 mo. (8 people)	3-5 mo. (13 people)	6-10 mo. (7 people)	16-30 mo. (5 people)
4- None	9- None	4- None	2- None
Number of people, Items installed, Time since installation			
1- t - 1yr 1- w - 2yr 1- w, s - 3mo. (bought new home) 1-t,w,s -1.5 to 3yr	1- w, s - 11 mo 1- t, s - 13 mo 1- s, w - 2yr, 3yr 1- t,w,s - 3yr	1- s - (no time) 1- w - 12 mo 1- s, t - 4yr	1- w - (no time) 1- s - SINCE 1- s, w - 2yr, 10 yr

* T= toilet, W= window, S=showerhead

- 7) Do you recycle any of the following at home? If yes, for how long have you?
- Paper
 - Glass bottles
 - Aluminum or metal cans
 - Plastics
 - Cardboard
 - Batteries
 - Electronics

Results:

Analysis Group	1-2.5 mo.	3-5 mo.	6-10 mo.	16-30 mo.
Recycle none	1	3	4	1
Recycle all but 2*	6	6	2	2
Recycle all but 1	1 (not batteries)	2 (not electronics)	-	2 (1 not batteries, 1 not electronics)
Recycle all	-	2	1	-
Begun since working in green building	1	1	-	2
No time written	-	2	-	1

*Recycled all but batteries and electronics

- 8) How often do you purchase eco-friendly products or brands when they cost more than regular products or brands?

Results:

Answers	Total		Breakdown by Time in Building			
	Number	Percent	1-2.5mo	3-5 mo	6-10 mo	16-30 mo
1 Never	-	-	-	-	-	-
2 Rarely	8	25	3	3	2	-
3 Occasionally	16	49	3	4	4	5
4 Often	9	27	1	6	1	-
5 Always	-	-	-	-	-	-

9) Do you regularly do any of the following? If yes, for how many months have you?

- a. Use environmentally friendly cleaning
- b. Use environmentally friendly bug
- c. Use compact fluorescent light
- d. Drive a high mpg or alternatively fueled vehicle
(e.g., hybrid, electric, natural gas, or biofuel)
- e. Compost food and/or yard
- f. Walk/bike as an alternative to
- g. Take public transportation instead of
- h. Take your own reusable bag to the
- i. Buy organic food
- j. Contribute money to environmental groups such as
Sierra Club, Greenpeace, Audubon Society

Results:

Sustainable Product/Activity	Percentage*
Use sustainable cleaning supplies	36
Use sustainable bug killer	30
Compact fluorescent Light Bulbs	58
High mpg or alternatively fueled vehicle	12
Compost food and/or yard waste	15
Walk or bike as alternative to driving	15
Public transit as alternative to driving	6
Take reusable bag to store	18
Buy organic food	48
Contribute money to environmental group	9

* Percentage of participants who do this regularly. Percentage does not add to 100 because participants checked multiple items.

Sustainable Product/Activity	Number of People per Time Group			
	1-2.5 mo.	3-5 mo.	6-10 mo.	16-30 mo.
Total in group	8	13	7	5
Use sustainable cleaning supplies	2	5	3 (2*)	2 (1*)
Use sustainable bug killer	-	5 (1*)	2	1
Compact fluorescent Light Bulbs	4	8 (1*)	5 (1*)	4 (1*)
High mpg or alternatively fueled vehicle	3	1	-	-
Compost food and/or yard waste	3	1	-	1
Walk or bike as alternative to driving	2	3	-	-
Public transit as alternative to driving	-	2	-	-
Take reusable bag to store	3 (1*)	3	-	2
Buy organic food	4 (1*)	7	2	3 (1*)
Contribute money - environmental group	-	2	-	1
None	-	3	-	-

* Number of participants who began this action subsequent to beginning work in green building.

10) To what degree do you think your spending habits (i.e., voting with your dollars) have an effect on the market, and contribute to environmental activism to protect the environment?

Results:

Answers	Number (33 Total)	Percent
5 Major impact	-	-
4 Considerable impact	9	27
3 Small impact	21	64
2 Almost no impact	3	9
1 No impact	-	-

11) There are different opinions as to what it takes to be a good citizen. How important is it to you to choose products for political, ethical or environmental reasons, even if they cost a bit more?

Results:

Answer	Number	Percent
7 Very important	-	- %
6	4	12
5	15	45
4	10	30
3	3	9
2	1	3
1 Not at all important	-	-

12) How important is it to you to participate in political activism, including things like voting, signing petitions, & financially contributing to a politically-active organization?

Results:

Answer	Percent
7 Very important	3%
6	6
5	15
4	21
3	30
2	12
1 Not at all important	12

13) How would you rate the condition of the environment today -- that is, the overall condition and quality of the air, water, land, and wildlife?

Results:

Rating	Present State
5 Excellent	0 %
4 Good	18
3 Fair	39
2 Poor	39
1 Very Poor	3

14) How concerned are you about the future of the environment?

Results:

Rating	Future State
5 Very concerned	45%
4	36
3	18
2	0
1 Not at all concerned	0

15) In general, do you think improving the environment conflicts with economic growth?

Results:

Answers	Percent
Always conflicts	0
Conflicts most of the time	18
Don't know	24
Conflicts some of the time	55
Never conflicts	3

16) To what degree would you consider yourself an environmentalist?

Results:

Rating	Percent
5 Die hard	0%
4 Substantial	9
3 Moderate	67
2 Barely	24
1 Couldn't care less	0

17) During the past year, how much have you thought about the impact that you personally have had on the natural environment ?

Results:

Rating	Percent
5 All the time	3%
4 Often	42
3 Sometimes	45
2 Barely any	9
1 Not at all	0

18) Do you have any children or grandchildren?

Results:

Yes 21
No 12

Concern for Future of Environment With and Without Child

Answers	People With a Child	People Without a Child
5 All the time	49%	42%
4 Often	33	42
3 Sometimes	20	16
2 Barely any	-	-
1 Not at all	-	-

Think of Impact With and Without a Child

Answers	People With a Child	People Without a Child
5 All the time	5%	0%
4 Often	48	33
3 Sometimes	29	66
2 Barely any	19	0
1 Not at all	0	0

19) What is your highest level of education?

Results:

Level of Education	Number	Percent
High School Diploma	7	21
Associates	7	21
Bachelors	12	36
Masters	4	12
PhD	2	6

20) What is your annual household income?

Results:

Income	Number	Percent
> \$30,000	1	3
\$30-60,000	7	21
\$60-100,000	10	30
< \$100,000	15	45

Frequency Purchase Eco-Friendly Products When Higher Priced, by Income Level

Income	Frequency (# / %)				
	1- Never	2- Rarely	3- Occasionally	4- Often	5- Always
> \$30,000	-	1	-	-	-
\$30-60,000	-	3	3	1	-
\$60-100,000	-	1	8	1	-
< \$100,000	-	3	5	7	-

Relationship Between Purchasing Behavior and the Value of Intentional Engagement

# 10 Answer	#8 Answer	#11 Answer	#12 Answer
2	3	3	3
2	3	4	7
2	4	6	7
3	2	4	3
3	2	4	4
3	2	4	5
3	2	4	5
3	2	5	5
3	2	5	6
3	3	2	5
3	3	3	4
3	3	4	2
3	3	4	4
3	3	5	3
3	3	5	3
3	3	5	6
3	3	6	3
3	4	5	1
3	4	5	4
3	4	5	5
3	4	5	5
3	4	5	5
3	4	5	7
3	4	6	7
4	2	4	5
4	2	5	5
4	3	3	6
4	3	4	4
4	3	4	4
4	3	5	2
4	3	5	4
4	3	6	6
4	4	5	5

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