INFLUENCE OF THE DOMINANT SOCIAL PARADIGM ON CONSUMER ENVIRONMENTAL ATTITUDES, VALUES AND BEHAVIORS

by

(Under the Direction of Michael Tarrant, Ph.D)

ABSTRACT

The purpose of this study was to investigate the proposed theoretical model to explain consumer behavior in relation to the environment that incorporates the values and principles of the Dominant Social Paradigm (DSP) as factors in predicting environmentally friendly behavior. The assumption underlying the theoretical model suggests the DSP was the guiding structure in which individuals make consumer behavior decisions regarding environmental behavior. One objective of this study was to continue the effort of Kilbourne by examining the environmental conditions as a crisis of standards. The second objective was to investigate the effects of the DSP principles within the general predictive relationship between attitudes and behavior. Descriptively, the results indicate support for the environment and environmental issues. Paradoxically, environmental behavior results do not support environmentally responsible behavior. The predictive results imply the DSP was the best overall predictor of consumer behavior. The predictive results imply as belief in technology increases within the DSP, environmentally responsible behavior will decline. The political construct predictive results imply that as belief in the political system increases, environmentally responsible behavior will increase, thus supporting the crisis of paradigms. Complicating the results was the internal reliability measures associated with the DSP scale. Future research should include more scale development work within the DSP to provide improved internal consistency measures.

INDEX WORDS: Dominant Social Paradigm, New Environmental Paradigm, Environmental Behavior, Environmental Attitudes

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by

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DEDICATION

I would like to dedicate this dissertation and the completion of my Ph.D. to my family, Susan, my lovely and supportive wife, Will, our oldest son, and Daniel, our youngest son. Susan, you provided me with the love, support, emotional and financial, optimism and realism necessary for me to complete this degree. Will and Daniel, you have provided me with constant reminders of my priorities in life. A dissertation can consume you and a family. Susan, Will and Daniel, I want to thank each of you for not allowing this dissertation to consume our family, for helping me to keep my priorities in the proper order and for giving me the time and support necessary to complete this project. I will never be able to thank each of you enough for what you have done, but I hope that you know that without each of you in my heart, the completion of this degree would not have been impossible. **I love you Susan with all of my heart. I love you Will and Daniel as much as a parent could love their children.**

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CHAPTER 1

INTRODUCTION

Politically, concern for the environment within the United States has reached new heights during the last five years. Fueling the concern is a documentary, “An Inconvenient Truth” (2005), published by Al Gore, the former United States Vice President. This documentary provides a detailed examination of global warming and climate change, and the effects of each on our society. The documentary presents strong evidence for both global warming and climate change as environmental issues that require everyone’s attention. In addition, a shift in President George Bush’s environmental strategy created more concern and more action regarding global warming and climate change at the government level (Heath & Gifford, 2006). At the forefront of this anxiety are the political strategies concerning the environment, and how to develop policy regarding the overall effects of global warming. Although global warming and environmental issues, in general, should not be a political issue (Gore, 2005) the reality is these issues are becoming center stage in American politics.

The primary concern politically, is the economic plausibility of incurring an environmental behavior shift. Individuals still make most decisions regarding their existence based on the economic effect of that decision. Further, we live in a global society that focuses on the “now,” not the “future.” Negative effects within the environment are often seen as futuristic, not a concern for now. In essence, why should we be concerned about the environment, what is happening is just part of the long-term natural processes (Gore, 2005)? This is the thought often permeating through society. Further, how do we convince society members to change behavior(s) when the economic consequences of the behavior change are viewed as unstable? Thus, are these environmental concerns and problems societal issues, or is this issue a matter of survival for our planet?

Central among current environmental issues is global climate change or global warming, caused by the increasing build-up of carbon dioxide gases. Specifically, the anthropocentric cause of the increased carbon dioxide gases is at question. Politicians, economists, journalists and often society members have been given the impression of confusion and discord among the climate scientists relative to this issue (Oreskes, 2004). However, a 2004 study analyzing 928 papers published in refereed scientific journals suggested consensus exists among scientists regarding the human influence of global climate change. Of these studies, none disputed the fact humans influence the rate of carbon dioxide growth in the atmosphere (Oreskes, 2004; Gore, 2005). In fact, more than 75% of these articles examined, implicitly concur with the Intergovernmental Panel on Climate Change (IPCC) position “Human activities are modifying the concentration of atmospheric constituents that absorb or scatter radiant energy” Oreskes, 2004, p. 1686). Of the publications that appeared in the popular press during this same time period, more than 50% of these publications suggest human activities may, or may not be the cause of global warming, creating confusion in society (Gore, 2005).

Scientifically, global climate change is caused by the build-up of greenhouse gases which trap the sun’s infrared rays within the earth’s atmosphere, which causes the earth’s surface temperature to rise (Gore, 2005). In theory, the more of these greenhouse gases released into the atmosphere, the more gases are trapped and a gradual increase in overall surface atmospheric temperature. Surface temperature rise causes the following concerns for scientists as well as society; alters the climate and weather patterns, which may cause more frequent and severe storms, coastal flooding, extinction of certain animal species, and alters the length of seasons (Oreskes, 2004; Gore, 2005). Natural scientists report global climate change is causing significant effects to the ecosystem such as; global temperature change (rising), a rising global sea level, more frequent droughts and more frequent dramatic changes in weather patterns (Heath & Gifford, 2006).

Despite the serious potential effects of global warming, there exists great skepticism among citizens that global climate change is actually occurring. For the citizens who are aware of global climate change, often the concept is misunderstood, thus casting more doubt regarding the effects of global warming (Gore, 2005; Heath & Gifford, 2006). Worldwide, the United States (U.S.) is the leading country in human produced CO_2 gases. However, developing countries, in particular countries that are growing economically are also producing more CO_2 gases that are being released into the atmosphere. Further, these developing countries are becoming more dependent on oil and gas as their economy continues to grow. China, a country with increasing development in its industrial production and its automobile consumption, continues to produce additional CO_2 gases as they have developed economically. In fact, China's huge population and recent economic development have created an environmental catastrophe. China is already the second largest emitter of greenhouse gases that cause global warming and is likely to overtake the U.S. as the largest emitter within the next twenty years (Harris, 2006). China has indicated economic growth is their primary concern, not behavior that is protective of the environment (Harris, 2006). This is not uncommon among most economically developing industrial nations. How do you balance the necessary restrictions regarding global warming versus economic sustainability or development? Further, how do you convince developing countries to curb potential economic growth with environmental sustainability? The answer to each question is seemingly obvious. However, the paradigm which guides our world, our decisions, our opinions, and most importantly, our behaviors suggest these questions require society to make some difficult choices. These choices are not necessarily determined within the current paradigm in which most of the world operates.

The paradigm which guides our worldview is the Dominant Social Paradigm (DSP). Specifically, the DSP is defined by three diverse dimensions, political, economic and technological. The DSP of western society was formed during the period of Enlightenment liberalism (Pirages & Ehrlich, 1974; Rifkin, 1980; MacIntryre, 1988) and continues to be the

major social, intellectual and political force in current society. This worldview provides the rationale for society to pursue individual self-interest, self-government, efficiency, and overall, the pursuit of the greatest good for society. Fundamentally, liberalism is used to direct thought and analysis of societal issues in a manner to prevent another paradigm from being considered. Within the DSP, the role of maintaining the status quo is a function of liberalism. Liberalism, as defined for this paradigm, references a philosophy for a political system, based on a limited government and private property rights, not the liberalism associated with current politics. Enlightenment liberalism might be described as conservative politics in current society, and thus any references to liberalism within this study reflect conservative thoughts and actions.

The role of liberalism within the Dominant Social Paradigm supports the traditional priority dominant within western society; economic growth. This is a given within the DSP. Our society lives and expects the economy to grow and for everyone in society to seek a better economic life. A subordinate goal expects individuals to accumulate capital. Progress is often defined by the accumulation of material wealth and capital (Kilbourne, 2004). Socially, we evaluate members of society based on the amount of capital they have accumulated. Further, the pursuit of capital does not produce high levels of social justice. The pursuit of capital implies income or money is most important. Socially, this may create problems for some members of society as the production of capital is sometimes more important than individual or social health. An example of this could be found in the policies related to tobacco.

Thus, in the paradigm of the DSP, the subordinate goal and evaluation criteria of economic growth further substantiate the beliefs held within the paradigm. For those who believe in the free-market economy, the hypothesis of global climate change is seen as natural and not the result of human action. Information pertaining to global climate change is interpreted through egocentric bias (Kunda, 1990; Wade Benzoni, Hoffman, Thompson, Moore, Gillespie, & Bazeman, 2002); individuals will interpret information in a self-serving manner. Individual self-interest in the environmental issue also determines behavior toward the environment. An

individual may behave responsibly toward a particular environmental issue, if performing the environmentally responsible behavior has a self-benefit to the individual (Kalinowski, Lynne & Johnson, 2006).

The technological dimension of the DSP suggests all problems can and will be solved by the application of a technological fix or *techno fix* (Postman, 1993; Winner, 1996). Essentially, it is assumed the application of technology will succeed in solving human problems, including environmental problems (Cotgrove, 1982; Dunlap & Van Liere, 1984; Milbrath, 1984). A foundational ideal of the DSP is the belief and faith society places on science and technology to solve any environmental/natural resource crisis. Even if technological environmental disasters occur, these are rebuilt within the DSP as aberrations that can be corrected with more sophisticated technology (Kilbourne, Beckman, Lewis, & Van Dam 2001; Kilbourne, Beckman, & Thelen, 2002). This thought process further substantiates linear thinking; what was true in the past will continue to be true in the future. History has shown to great human satisfaction that technology in which is such an important part of capital can solve many problems that natural limits are supposed to impede continuing economic growth (Cobb, 1999). With faith in technology maintained, concern for the environment and the need for necessary changes to protect the environment are seen as unnecessary. Even if environmental disasters occur, these are determined to be aberrations within the DSP, thus maintaining consumer optimism. The belief is more sophisticated technology will be developed to solve the environmental disaster. This restores consumer faith in technology and strengthens the belief that behavior change is unnecessary.

Politically, liberalism or liberal democracy is the essential aspect of the political dimension in the DSP (Kilbourne, 2004). Political liberalism characterizes individuals as possessive of themselves and ultimately justifying the accumulation of private property (MacPherson, 1962; Rawls, 1993). The focus of liberalism is individual freedom, small government, and private property rights. Liberalism supports and encourages the pursuit of the

affluent lifestyle, in which abundance and excessive consumption are possible, and more importantly, encouraged. The role of government within liberalism is the protection of private property, enforcement of contracts and allocation of rights to all citizens. The government should remain neutral in what constitutes “good” or individual welfare (Sandel, 1996; Sunstein, 1997). In this system, the assumption is if environmental problems arise, then a new law(s) can be created to address the issue. However, this law should be developed with human needs being placed ahead of natural resource needs. Environmental laws are especially important for the sustainability of natural resources and human survival (Meinhold & Malkus, 2005). Environmental concern is reduced under the assumption; if issues arise; political reformism will solve them (Kilbourne et al., 2001; 2002; 2004). It may also be argued this form of *laissez faire* politics performs very well in times of economic growth, but develops problems during times of resource scarcity (Ophuls, 1977).

Two main economic aspects are addressed; the necessity for continued economic growth (Heilbroner, 1985) and the definition of economic progress. Economic progress may be defined as an increase in material well-being for an individual (Bury, 1932). Thus, economic growth is good, and more is even better. Leading to economic growth is the increase in production and consumption of goods and services, including the goods and services related to natural resources. Environmental issues are treated as market failures (Kilbourne et al., 2001; 2002). Environmentalists argue treating environmental issues as a market failure is not the problem, but the non-existence of a business market to manage the environment as the problem (Sagoff, 1988). Conceptually, the DSP assumes everything, including environmental resources, can be controlled and allocated through the economic principles of supply, demand and price. Likewise, basic economic principles assume unlimited supplies of resources, which in times of resource scarcity present problems within the environment. With public belief in economic progress, meaning more material well-being, the need for social change regarding the environment and global warming fail to exist if the behavior change will cause the economy to

be unproductive. It may be argued attitudes toward the need to protect the environment exist. However, behavior to support these attitudes only exists when these behaviors produce economic progress, thus substantiating the ideals of the DSP.

Environmentally, the ideals of the DSP and liberalism present problems when developing policies to handle environmental disasters and resource scarcities. The assumptions of the DSP provide the functional process in which the world operates. To summarize, the essential elements of the DSP promote consumer optimism technologically with the techno fix, politically with liberal democracy that focuses on private property, impartial politics and individual possessions, and liberal economics to concentrate on individuals satisfying their individual interests in free markets, promoting the consumption of goods and services with an unlimited supply. The combination of these elements may compare to the tragedy of the commons in which unconstrained individuals ultimately destroy the resources necessary for their well-being by trying to maximize their own interests (Ophuls, 1977; Dryzek, 1996).

Since the period of the enlightenment, individual good and economic progress has been, and remains, forefront in the collective good for society. As a result, we continue to use in excess the natural resources causing not only global warming, but other resources vital to survival. For example, society has used in excess, coal, gas, wood, and water for the personal and economic good within society. The overuse of coal, gas and wood has contributed greatly to global warming according to Gore and the Intergovernmental Panel (Gore, 2005). The excess use of water is visible each time drought conditions persist and the threat of water loss is present. The excess use of our natural resources continues to assume an unlimited supply of these resources. With an exponentially increasing population, how will the earth support the growing demand for natural resources? Using the DSP as a guide, society will continue to behave as normal, believing all things will continue to follow the status quo. Society's faith in the DSP is a phenomenon we are taught from the beginning of life. To change requires a re-thinking and a commitment to ideals that socially, politically and economically, are uncomfortable.

Change is possible within society, but often changes are due to urgency. The effects of environmental issues such as global warming, are viewed as gradual, and do not create a sense of urgency. The gradual effects, plus the challenge to the beliefs and principles which guide our society have placed measureable doubt on the overall existence of global warming.

For example, global warming has been referred to as “junk science” (Milloy, 2001), creating skepticism regarding environmental issues. “Junk science” is a term used in the popular press to justify contrarian skeptical suspicions that science is being used to further the agendas of liberal leftists (Jacques, 2006). Politically, environmental skepticism is a concept that has been created by contemporary conservatives to question the environmental crisis described by Al Gore. In this case, the contemporary conservatives would represent those who believe in the principles of liberalism as a guide to an overall political system. Thus, the contemporary conservatives in today’s politics may represent both republicans and democrats. In many cases, the skepticism regarding the environment has been created in an effort to maintain the status quo economically. For example, Lomborg (2001; 2004), suggests the needs and desires of humans be considered regarding any assessment of the state of the world. Essentially, environmental concerns should always be secondary to the human needs and desires when considering policy. Many policies have been proposed by scientists regarding global warming to suggest sweeping changes in behavior, thus affecting the overall economy, usually in a negative manner (Jacques, 2006). Since 1990, a substantial amount of literature has been written to provide a skeptical view of the environmental crisis. In almost all cases, the writer would be considered contemporary conservative in today’s political circles (Jacques, 2006). Even if the skepticism information is incorrect, the importance and belief in this skepticism with the conservative public is great. Science alone, if at all, does not guide environmental or other policy decisions. The fact that skepticism has found an audience among important decision-makers is more important than its representation of environmental conditions (Harrison & Byner, 2004).

To assume environmental skepticism was created just to promote economic coffers does not provide adequate justification for the arguments against global climate change. Environmental skepticism should be viewed as the contemporary conservative's attempt at protecting the core values found in the DSP. Sound environmental policies threaten the core values of the DSP. These environmental polices require natural resources to have the same value as human life and human sustainability. Within the DSP, the core values support individual self-interest, free enterprise and economic growth, all in support of human sustainability. Economic growth assumes an unlimited supply of products, and in this case natural resources. Sound environmental policies limit economic growth, faith in future abundance, our emphasis on individualism, and perhaps most importantly, the commitment to a limited government involvement in our way of life. Lomborg (2001), for example, urges policymakers to prioritize funds and commitments based on his skeptical ethics. His skeptical ethics, in theory, suggest the state of the world be assessed based on human needs and desires, without the consideration of plants, animals, and nature in general.

The effects of global climate change as presented by many scientists, and most recently by Al Gore in his book "An Inconvenient Truth," directly conflicts with the DSP core value of trust in the efficacy of science and technology. To maintain the status quo, society has trusted that science and technology could and would develop the necessary technology to overcome any natural crisis that would affect our way of life. In essence, science and technology have always found a solution to further sustain the core values of the DSP. Ecologists, with their concerns regarding global warming, have threatened this core value.

As a result, the environmental skeptics, some of whom are accomplished scientists, have produced, through different media outlets, in particular television (Jacques, 2006), questions regarding the existence of global warming and other environmental issues. This skepticism has produced enough doubt that faith in the DSP has been maintained, or at the very least prolonged. In fact, the argument could be made supporters of the environmentalism and

environmental skepticism movements are more concerned with promoting their own agendas, in which neither group is willing to remove the politics and resolve the issue based on scientific fact(s). Gore states “this is a moral issue, not a political issue” (2005, p. 286). Kysar (2003), suggested environmentalists like the Worldwatch Institute and skeptics like Lomborg, are guilty of hyperbole which they use to focus attention on their own policy agenda through competing litanies.

In 1978, Dunlap and Van Liere developed a scale to measure a potential new worldview, the New Environmental Paradigm (NEP). This new worldview, which could be a shift in paradigms, focuses on attitudes that likely began with the increasing number of pro-environmental movements such as the ecology movement, peace movement, and various grassroots movements (Capra, 1995). The NEP scale was developed to measure respondent attitudes toward preserving the balance of nature, limits to growth, achievement of a steady-state economy, and the need to reject the anthropocentric attitude toward nature (Dunlap & Van Liere, 1978). These attitudes potentially represent a different set of principles in which to view the world. Theoretically, this scale has been used to measure an environmental worldview which recognizes the limits to growth and consequences for development within our environment (Nooney, Woodrum, Hoban & Clifford, 2003). Ideally, if the NEP scale measures a new worldview, then potentially a new “environmental-friendly” paradigm has been established within our society.

To assess if a new paradigm exists, the factorial structure of the NEP may provide the most evidence of the development of a new paradigm. Initial analyses of the original NEP structure assumed four factors were measured. The prevailing thought was individuals may have pro-environmental attitudes toward specific environmental issues as measured within the NEP. Use of the original scale never consistently produced a four-factor scale, however. The developers of the scale suggested four constructs were to be measured with the original scale. Inevitably, the research community started their analyses with a four-factor solution. However,

studies produced factorial solutions ranging from a one-dimensional to a five constructs scale. In 2000, Dunlap re-created the scale and modified the number of positive and negative statements, and modernized the wording to produce the scale currently used in most environmental concern/attitude measurement studies. Also, Dunlap, Van Liere, Mertig, & Jones (2000), determined the revised scale is most likely one-dimensional, or perhaps one worldview. A one dimensional scale supports the measurement of an overall worldview.

Research studies have examined environmental concern and its affect on environmental behavior have produced mixed results (Kilbourne et. al, 2001; 2002). For many, the environment is viewed through the conceptual framework of the Dominant Social Paradigm (DSP). In fact, even as pro-environmental attitudes have increased, supportive behavior of the environment has not been reciprocal. Engrained within society are the guiding concepts of the DSP, and as such, behavior appears to be guided by the DSP regardless of attitudes and values. Further, the DSP provides conceptual guidelines for the immediate, and teaches society the future will take care of itself. The NEP, or environmental support, is often seen as futuristic and thus an immediate behavior change is unnecessary. For example, the current view held by China that economic progress is more important than sustaining the resource, is an example of views held within the DSP. For the Chinese and the Chinese government, promoting economic growth and happiness in the short term is more important than promoting resource conservation and sustainable economic growth over the long term (Harris, 2006). The question is why? The simple answer is the belief in the DSP; specifically the future will take care of itself.

Further support of the NEP as a paradigm may be found in the development of the environmental skepticism literature. Environmentalists and ecologists are assumed to have similar ideals as those found in the NEP. Environmental skeptics have produced literature to further the ideals of the DSP. It could be argued the development of the environmental skepticism literature has been as a result of the DSP being in a state of crisis. Taking responsibility for global environmental integrity would be a positive step towards

revolutionary/paradigmatic changes in which one would incorporate the obligations of human societies to accept membership in the larger international and ecological communities (Eckersley, 2004). Recognition of the NEP threatens the sustainability of the DSP. However, is this cursory recognition towards the NEP, or is it a legitimate paradigmatic view on how society may view the world? This would further support the assessment of Kilbourne et al. (2001), the NEP represents a crisis of paradigms.

The global warming/environmentalism problem might be summarized as an issue divided, based on the competing core values of the DSP and NEP. Table 1 outlines the core values of each. The values described in the DSP have led to the creation of the environmental state in which our society currently exists. Further, these values have produced great economic growth, technological invention and a political system which allows the individuals within this system to be free with their choices. The values found within the NEP represent the values deemed necessary to sustain the planet on which we live. The primary difference focuses on the anthropocentric view toward nature. In summary, will society accept that our natural resources must be considered equal to humans, or will the success of humans outweigh all other values?

Table 1
DSP and NEP Core Values

DSP Core Values	**NEP Core Values**
Pursue individual self-interest, nature is second, humans are first	Preserve balance of Nature
Self-government	Limits to growth
Efficiency, economic growth, free-market economy	Achievement of a steady-state economy
Greatest good for Society, accept the anthropocentric attitude toward nature	Reject the anthropocentric attitude toward nature

The view of these values is a primary concern for the growing problem of global climate change. Theoretically, which of these core values is/are accepted is likely to determine the

consumer behavior patterns within our society. Practically, individuals within society are likely a bit confused and thus have somehow meshed these two value systems into one. This would lead to environmentally protective behaviors on specific issues, but not necessarily a complete behavioral change that is protective of the environment in general. In short, environmental-friendly behaviors considered convenient and cost-saving are likely to be accepted, but the behaviors that are currently inconvenient and cost-producing are likely to be unaccepted at this time.

Purpose of Study

The purpose of this study was to investigate and propose a theoretical model to explain consumer behavior relative to the environment that incorporates the values and principles of the DSP as factors in predicting environmentally friendly behavior. The diverse set of perspectives presented within the DSP represents a unifying construct referred to as a paradigm (Kuhn, 1996). The purpose of this paradigm is to provide structure, guidance and function within a society. The assumption is the paradigm level precedes other levels of analysis such as attitudes, values, beliefs, behavior and behavioral intentions. Societal action evolves in accordance with the dictates of the paradigm. The contrasting force to the DSP is the NEP, developed by Dunlap and Van Liere (1978). Initially, the NEP measured environmental attitudes toward the environment. Recent studies have used the revised NEP (Dunlap et al., 2000) to measure a worldview. However, the NEP remains at this point an attitude scale with limited ability to measure a worldview. One objective of this study was to continue the effort of examining the environmental crisis as a crisis of standards**.** To do this, a theoretical model (Figure 1) was proposed suggesting the DSP is the standard which guides consumer behavior relative to environmental and ecological issues. Further, the proposed model examines the influence of the DSP on pro-environmental attitudes and values. The proposed model for this study suggests that individual consumer behavior is guided by the principles of the DSP. Specifically, pro-environmental behaviors and attitudes are influenced by the principles of the

DSP. Previous studies have indicated that pro-environmental attitudes are generally a good predictor of pro-environmental behavior, if both the attitude and behavior are specific (Ewing, 2001). This is an expansion of the proposed theoretical model by Kilbourne et al. (2001) which examined the complex relationships of the DSP to environmental attitudes and necessary perceived changes.

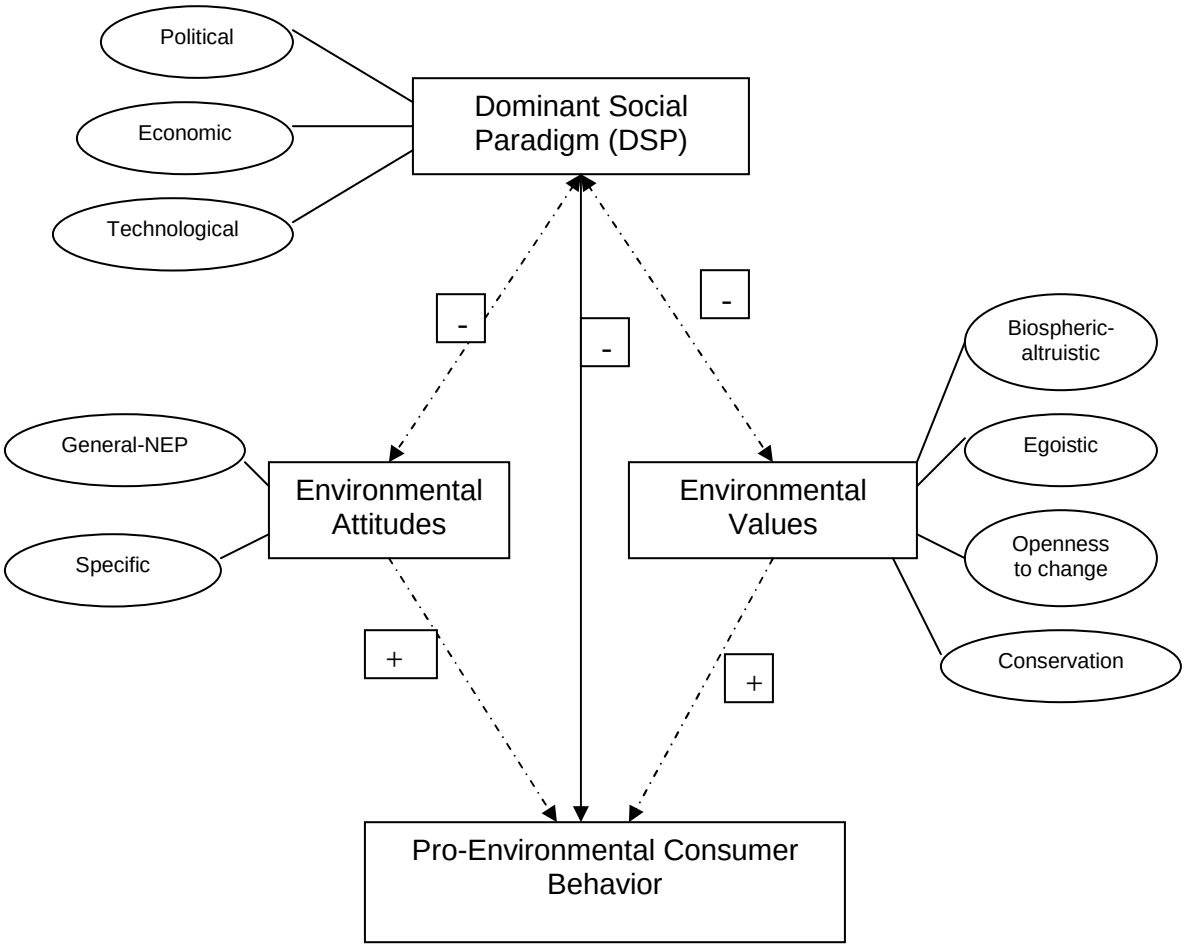

Figure 1: Proposed Theoretical Model (expansion of the model proposed by Kilbourne et al., 2001) of Dominant Social Paradigm, Environmental Values, Environmental Attitudes and Ecologically Conscious Consumer Behavior.

The proposed model for this study suggests individual consumer behavior is guided by the principles of the DSP. Specifically, pro-environmental behaviors and attitudes are influenced by the principles of the DSP. Previous studies have indicated pro-environmental attitudes are generally a good predictor of pro-environmental behavior, if both the attitude and behavior are specific. A second objective of this study is to investigate the effects of the DSP principles within the general predictive relationship between attitudes and behavior. The DSP principles factor in the economic, political and technological beliefs of an individual. This may offer a more reliable and valid predictive instrument when predicting specific or general environmental-friendly consumer behavior.

Definition of Variables

Study Hypotheses

To review, the study objectives are: 1) to continue the effort of examining the environmental crisis as a crisis of standards, and 2) to investigate the effects of the DSP principles within the general predictive relationship between attitudes and behavior. To assess the objectives, the following hypotheses were tested:

Hypothesis 1: Respondents with greater confidence in the DSP constructs (political, economic, and technological) will exhibit a statistically significant smaller amount of environmental concern as measured by the biospheric/altruistic and openness to change value clusters.

Hypothesis 2: Respondents with greater confidence in the DSP constructs (political, economic, and technological) will exhibit a statistically significant improvement in egoistic values and conservation values.

Hypothesis 3: Respondents with higher measures in the biospheric/altruistic and openness to change value clusters will exhibit a statistically significant amount of greater concern for the environment as shown in the measures of specific and general environmental attitudes.

Hypothesis 4: Respondents with higher measures in the egoistic and conservation value clusters will exhibit a statistically significant amount of lesser concern for the environment as shown in the measures of specific and general environmental attitudes.

Hypothesis 5: Respondents with higher measures in the DSP constructs (political, economic, and technological) will exhibit a statistically significant amount of lesser concern for the environment as shown in the measures of specific and general environmental attitudes and environmental behaviors.

Hypothesis 6: Respondents who exhibit greater support for the constructs within the DSP will exhibit statistically significant lower levels of pro-environmental behavior as measured by the behavioral constructs within the ECCB.

Hypothesis 7: Respondents who exhibit high concern for the environment, as measured by the NEP and specific measures of environmental concern and biospheric/altruistic and openness to change value clusters, will exhibit statistically similar measures of environmental behavior as those respondents who exhibit lower levels of environmental concern and lower levels in the egoistic and conservation value clusters.

Environmental attitudes and values are expected to have a tenuous relationship on consumer behavior in the proposed model. Measurement of DSP attributes in conjunction with environmental attitudes and value measurements may produce results indicating support for the DSP and pro-environmental attitudes and values. In fact, recent research on each would suggest society supports pro-environmental attitudes and values. Even the DSP, with liberalism guiding the thought process, would allow for some positive attitude(s) toward the environment. Attitudinal and value support for the environment without pro-environmental behavior would likely result in a state of paradigmatic crisis for the DSP. Essentially, this would support the notion individuals may behave more environmentally friendly if the ideals of the free market system could be protected. However, the guide for our actions and behaviors is the DSP and the free market system in which we live. In theory, this free market system is not supportive of

the ideals necessary to protect and conserve our natural resources. The free market system supports human sustainability and economic progress.

The DSP is assumed to be the foundation which individuals use for their decisions regarding consumer behavior. Similarly, an individual's value and attitudinal responses are likely to be affected by the belief of DSP attributes. According to Dietz, Stern, and Guagnano, (1998), respondents to this model are more likely to be pro-environmental if the value responses are greater in the biospheric/altruistic and openness to change clusters. In theory, these individuals would be more likely to have pro-environmental attitudes and be responsive to ecologically conscious consumer behavior.

Conversely, individuals that have value responses greater in the egoistic and conservation clusters are more likely to be aligned with respondents who are supportive of the DSP constructs. Measurements with higher scores in these value clusters would likely support the DSP. The respondents who respond favorably to the egoistic cluster may exhibit some favorable environmental responses, but only to the extent in which this environmental behavior or attitude best supports their own agenda.

The general measures of environmental attitudes in this study were measured using the revised New Environmental Paradigm (Dunlap et al., 2000). Respondents who exhibit high levels of environmental concern as measured by the NEP, or who exhibit specific concerns regarding environmental issues, are less likely to accept the DSP. Further, high levels of environmental concern would indicate support for objective one. To measure a paradigmatic change requires high levels of environmental concern be exhibited.

The relationship of the DSP constructs with the behavioral constructs is measured by individual responses to the ecologically conscious consumer behavior scale. The expected relationship is an inverse relationship. For example, if a respondent were to score higher on the items to reflect support for the DSP, that respondent would be expected to score lower on environmental behavior items within the ECCB. Conversely, respondents who were to exhibit

higher levels of environmental concern as measured by the environmental attitude scales and by the norm-activation model would be expected to respond more favorably with respect to environmental behaviors. Evidence of underlying support of the DSP among individuals who have pro-environmental attitudes or values may be present if individuals score high on measures of environmental concern or values associated with being pro-environmental, but show no significant differences in measures of environmental behaviors with those individuals who support the DSP.

For example, the behavior of driving a hybrid automobile would be predicted of individuals who are environmentally supportive. Yet, the paradigm of the DSP may lead a person not to buy a hybrid automobile because of the personal economic impact of the purchase. In essence, pro-environmental behavior is expected to be guided or at least influenced by the individual belief in the principles of the DSP. Regardless of an individual's attitude toward the environment, global warming or other environmental issues, the belief and trust in the DSP provides little desire or opportunity for change. Change for the individual is expected to be controlled through government policy changes and technological advances to allow our current lifestyle to continue. Responses to the behavior scale in this study should provide evidence of this. Expected responses would indicate minimal difference(s) in the behavior pattern(s) regardless of attitudes and values toward the environment.

The theoretical model presented suggests the DSP is in direct control of consumer behavior. Further, unlike Kilbourne et al. (2001) suggesting the DSP has a direct influence on environmental attitudes and values; the assumption in this theoretical model is the DSP has indirect influence on environmental attitudes and values, and a direct influence on individual consumer behavior. In essence, the DSP would allow for pro-environmental attitudes and values to develop. Within the paradigm of the DSP, protection of the environment would be controlled through the political, economic and technological system of society, and consumer behavior should be dictated by the influence of the DSP. In essence, consumer behavior is

dictated by the paradigm, not by individual attitudes or values toward a social concept. For example, pro-environmental behavior would be expected if legislation were in place to dictate this type of behavior. Further, pro-environmental behavior would be supported if the free market system was maintained. In the proposed model, pro-environmental attitudes and values are assumed to be present when pro-environmental behaviors are measured. However, in general, overall behavior is expected to be unfriendly toward the environment. Thus, the predictability of consumer behavior, environmental-friendly or non-environmental-friendly, will depend on the measured values of the DSP, primarily. A clear rejection of the DSP values would allow for the NEP to be used as the predictive mechanism for pro-environmental behavior.

Additionally, the proposed model will oppose the idea of an environmental worldview as suggested by the NEP. The proposed model will accept the idea that pro-environmental attitudes and values are prevalent and growing within society. However, the model suggests that behavior remains, in general, unfriendly toward the environment. Specific environmental-friendly activities are expected if they conform to the principles of the DSP, if they are economically efficient, cost-saving, or mandated by law. As such, the proposed paradigms shift from the DSP to the NEP, as suggested by Dunlap et al. (1980), according to the theoretical model proposed, would not have taken place. Attitudes and values that indicate overall support for the environment may, however, provide support for Kilbourne's assessment a crisis of paradigms is occurring.

In general, concern for the overall environment is growing. However, enough inconsistencies regarding global warming are present within the general public, indicating the environmental crisis exists mainly in the scientific community (Gore, 2005). Further, the contemporary conservative community has created the environmental skepticism movement to maintain and prolong the support of the DSP. The skepticism movement has provided enough doubt regarding global warming that individuals will continue to behave in a manner unfriendly toward the environment, except on specific environmental issues. Behavior to support these

issues likely supports a DSP component that would further substantiate the status quo. Support for the DSP component would most likely be economic or political at this juncture.

Summary

During the last thirty years, social scientists have focused much of their research on the motives resulting in maladaptive human behavior toward the environment. The primary assumption in environmental research is the degree environmental concern impacts specific environmental behaviors like recycling, energy saving, buying environmentally-friendly saving products or travel mode of choice (Bamberg, 2003). The approaches in which this research have been examined include: background factors of age, ethnicity, income or education as predisposing individuals to environmental concern (Jones & Dunlap, 1992; Gooch, 1995; Bechtel, Corral-Verdugo & Pinheiro, 1999; Leung & Rice, 2002; Schultz, 2000; Schultz, Unipan, & Gamba, 2000; Cottrell, 2003; Johnson, Bowker, & Cordell, 2004;), individual's environmental concern as a function of the risks they attach to environmental behavior and/or political action (Schultz & Zelezny, 1998; Poortinga, Steg, & Vlek, 2002; Rauwald & Moore, 2002), perception of environmental problems as a developmental phenomenon, such as an expression of higher-order needs (Dunlap, Gallup Jr., & Gallup, 1993; Brechin & Kempton, 1994; Ignatow, 2006; Olofsson & Ohman, 2006), treatment of environmental concern as a subset of the morally tinged human concern, generally rooted in universal values (Stern, Dietz & Kaloj, 1993; Stern, Dietz, Kaloj & Guagnano, 1995; Gooch, 1995; Widegren, 1998; Schultz, Zelenzny & Dalrymple, 2000; Meinhold & Malkus, 2005; Bereguer, 2007), and the factorial structure of the NEP (Gooch 1995; Stern et al., 1995; Corral-Verdugo & Armendariz, 2000; Nooney, Woodrum, Hoban & Clifford, 2003).

The measures of environmental concern have increased, and studies have generally indicated that society is more concerned with the overall health of the environment. In particular, individuals with higher education levels have exhibited higher levels of environmental concern and corresponding levels of environment-friendly behavior. The conceptualization of

environmental concern lies within the core of Inglehart's (1977) post-materialism thesis. Inglehart speculates individual values are reflective upon their socioeconomic class. Further, improvements in individual socioeconomic status would likely result in a shift of individual values from physical sustenance to quality of life. Research has presented some contradictory evidence to Inglehart's assessment with individuals in both industrialized and developing countries exhibiting high levels of concern for the environment (Dunlap, Gallup & Gallup, 1993; Brechin & Kempton, 1994; Dunlap & Mertig, 1995). Inglehart responds that public support for environmental issues is shaped by cultural factors, and the individuals located in developing countries may be influenced by the severe local environmental problems that exist (1995). In fact, environmental concern has increased in all segments of society. What is slow to change is the environmental-friendly behavior. In developing countries, the economic explosion that occurs as a country becomes more industrialized often causes individuals to behave in a manner to become economically self-sufficient. This is generally not environmentally friendly behavior.

Evidence suggests the amount a consumer might engage in environmentally benign behavior is an inverse function of the effort or inconvenience involved (Cheung, Chan & Wong, 1999; Gore, 2005). In fact, the premise behind Gore's book is to outline the human behaviors causing global warming and to highlight many of these behaviors as difficult for individuals to change, primarily due to the inconvenience of the change. Additional evidence suggests this inverse function is directly related to the personal benefit expected by the consumer (Allen, Davis & Soskin, 1993; Dobson, 2003; Lomborg, 2004; Jacques, 2006). For example, in a situation where there is little individual benefit and increased inconvenience, such as car pooling or taking mass transit to work, individuals are much less likely to choose the environmentally friendly behavior. Further, as individual living standards increase, pro-environmental behavior(s) are even less likely to occur (Ewing, 2001). However, if environmental friendly behavior reduces consumer cost and potentially increases comfort, such as home improvements like double-

glazed windows, then these behaviors are more likely to occur (Ewing, 2001). Essentially, if the benefits are greater than the costs of performing the environmentally friendly behavior, then behavior change is unlikely (Kysar, 2003). Regardless, the individual may have a positive attitude toward the environment, but their behavior is dependent on the amount of inconvenience or personal benefit derived from performing the behavior.

To conclude, the overall purpose of this study is to further substantiate that societal consumer behavior(s) remain guided by the DSP. As such, these behaviors are expected to represent the core values of the DSP. Therefore, the expected behavioral measurements within this study will represent non-friendly behavior toward the environment. The DSP is expected to have only an indirect or small influence on the environmental attitude and value measurements in the research. The results are expected to demonstrate attitude and value measurements which are likely to be more supportive of the environment, with behavior being supportive of the DSP. This would be an indication that a paradigmatic crisis is occurring within the DSP. If the attitudes and values are pro-environmental across this sample, even though behavior may still reflect the DSP values, it may indicate that individuals are willing to change if free market environmental friendly opportunities were to exist. Economically, these opportunities must be reliable and cost-friendly opportunities within the free market for the consumer to consider. The literature review will delve into the pro-environmental and environmental skepticism literature in an effort to substantiate the plausibility of pro-environmental attitudes and values among a skeptically behaving society.

CHAPTER 2

REVIEW OF LITERATURE

Global warming is defined by two competing bodies of literature. One body strongly supports and recognizes the influence of greenhouse gases and their potential affects on our future society. In fact, the scientific community supports the idea of global warming, and that humans are indeed contributing to global climate change. The environmental skepticism literature, regardless of whether it is correct about the scientific facts related to global warming or not, has created doubt among the public on whether global warming actually exists. This literature associated with environmental skepticism tends to focus on the core values within the Dominant Social Paradigm (DSP). The DSP insinuates a free market system and a political system, which concentrates on limited government intervention and an overall goal of human sustainability with modest regard for environmental stability. The purpose of this chapter is to provide a literature review for the following; the Dominant Social Paradigm, environmental attitudes (focusing mainly on the development and use of the New Environmental Paradigm), environmental values (examining Schwartz's norm activation model) and environmental behavior (investigating consumer environmental behavior, specifically the Ecologically Conscious Consumer Behavior scale).

Dominant Social Paradigm

To begin, a review of the Dominant Social Paradigm (DSP) is presented. The DSP has long been considered the social, political, economic, and technological paradigm which guides and prepares members of our society to live. The central point of the disagreement regarding environmental behaviors or behavioral change may originate within the core values of the DSP. Thus, a thorough understanding of the core values and how these core values affect individual views of the environment is necessary before proceeding. In western culture, the dominant

social paradigm is the driving force for social, political, and economic development. A paradigm is viewed as the basis which guides our underlying worldview (Korhonen, 2002). The concept of the Dominant Social Paradigm was developed by Pirages and Ehrlich (1974) and further elaborated on by Cotgrove (1982) and Milbrath (1984). Conceptually, the DSP supports an existing worldview that begins with traditional values (Dunlap & Van Liere, 1978). In essence, the DSP is defined as the pursuit of self-interest (economic), self-government (political), and efficiency (technology), or as the pursuit of the greatest good for society (ethical) (Pirages & Ehrlich, 1974). Thus, individuals who are guided by the DSP are likely to support greater economic growth, a government controlled by the people, and a belief in greater technology. In theory, economic growth and greater technology may be best for human society, but are they best for the environment? Belief in the DSP concentrates on what is best for humans in society, not what is best for the natural environment. Critical to environmental issues are the dimensions of the technological, economic and political (Kilbourne, Beckman, Lewis & Van Dam, 2001).

Technological

The aspects of the technological dimension to be examined are technological optimism (Postman, 1993) and technological politics (Winner, 1986). The relationship of technology to environmentalism assumes all problems can and will be solved by some application of technology (Winner, 1986; Postman, 1993). This pursuit of technological advancement has led to what Ehrenfeld (1978) calls the “arrogance of humanism.” As science and technology have advanced, material wealth and conditions have improved greatly. Advancing technology in our society has resulted in increased wealth. With increased material wealth, a faith in technology has developed such that individuals accept increased technology without questioning its effects (Kilbourne, Beckmann & Thelen, 2002). For example, new technology is often evaluated on whether the new technology will increase production and produce more profits, and not on the technology’s environmental effect. Based on this faith in technology and the assumption technology can and will solve all societal problems (Cotgrove, 1982; Dunlap & Van Liere, 1984;

Milbrath, 1984), the term used to describe a technological solution to a problem is that of a "technofix" (Ehrenfeld, 1978). An example of a technofix would be the use of a dam to control water flow. In many cases, water flow control is necessary in the production of electricity and for providing drinking water. Each of these has environmental impacts; however, historical uses of a technofix have been to primarily benefit humans. For global climate change, a technofix may play a role in the solution for the increasing levels of greenhouse gas.

This form of thinking is referred to as linear thinking, suggesting what has been true in the past will be true again in the future (Kilbourne et al., 2001). Even if environmental disasters occur, they are often re-defined within the DSP as an anomaly that can be corrected with more sophisticated technology (Kilbourne et al., 2001; Kilbourne et al., 2002). For example, when automobile exhaust was cited as a source of ozone depletion, more sophisticated exhaust systems were developed. Ideally, the more sophisticated exhaust systems were developed as a method for protecting the ozone layer, yet, this allowed for more vehicles to be produced and sold. As faith in technology is maintained, technological optimism remains in place, and the need for changes to protect the environment are seen as unnecessary.

The political character of technology is present in decisions that affect society as a whole. According to Winner (1986), political influence is immanent in technology. For example, large companies exhibit control, almost authoritarian control, regarding their use of technology and production (Kilbourne et al., 2001). Environmentally, the impact of large scale operations is much greater than smaller scale decentralized technologies (Kilbourne et al., 2001). An example of the impact of large scale operations may be viewed in China. As a developing nation, large scale operations are currently in motion, taking place without regard to their environmental impact. The focus is on economic impact. Logically, smaller scale technologies are likely to be more environmentally friendly, as supported by the environmental literature (Winner, 1986; Dryzek, 1987). But, in western society, large scale or centralized technologies control both material and political wealth. This is primarily true in developing and establishing

industrial nations, such as the U.S. and China. This is similar to the DSP dimensions. Thus, technology mirrors society, in that, as material wealth grows the large scale or centralized technology(s) can and will exert more influence on societal and environmental impact.

Political

In the DSP, the prevailing political ideology is that of liberal democracy. Primarily, individuals who are free, private property and a limited government are the focal points of this political ideology (Kilbourne et al., 2002). Liberal democracy may be interpreted as the ontological supposition that characterizes each individual as possessive of oneself and ultimately justifying the unlimited growth in private property and resources (MacPherson, 1962). This is the definition of what we now know as a conservative political outlook versus a liberal political outlook. According to Milbrath (1984), the DSP refers to what is believed to be the western mode of thought; that is resource exploitative, growth-oriented, consumptive and materialistic with very little concern for the environment. In conditions such as these, it is assumed that reformist politics are the solution to all problems, including environmental ones.

Further, the proposed method for handling environmental issues would be to create a new law or set of law(s) that would effectively ease the crisis or burden (Dryzek, 1996; Kilbourne et al., 2001; Kilbourne et al., 2002). From a resource perspective, this type of laissez-faire form of politics becomes problematic (Ophuls, 1977). However, a reformist political structure promotes and functions well under conditions of economic growth. Likewise, environmental and natural resource issues create less concern in times of economic prosperity. In the DSP political and economic structure, the assumption appears to be that resources, natural or human-made, are unlimited in terms of availability. Politically, the recognition that natural resources are not unlimited may be made, but it is often ignored in times of economic growth. Also, in times of economic despair, greater production of these natural resources is promoted in an effort to reduce prices and stimulate the economy. Our society often evaluates politicians based on the

state of the economy. Thus, politicians are likely to make political decisions based on the economic affect of that decision, regardless of their political affiliation.

Economic

A free market economy, with price mediating the exchange of goods and services, is the economic ideology that guides individuals in this paradigm. Two factors are necessary in this type of economic system, economic growth (Heilbroner, 1985), and progress, as defined by increased individual material well-being (Bury, 1932). In the DSP, the belief is that economic growth is good, and geometric growth is even better. Conversely, maximizing economic growth and production often leads to the excessive use of natural resources, resulting in limited resources available for use. In this system, increased technology may delay the use of some natural resources but, it does not eliminate their use.

Entropy law states that for any transfer of energy from one state to another, a penalty is incurred (Kilbourne et al., 2002). In this concept, the penalty is loss of energy in the future. This law is also referred to as the Impossibility Theorem (Daly, 1991; Daly & Townsend, 1993). Basically, this theorem states that entropy is always increasing, and available energy decreasing. Thus, at some juncture, no energy will exist for the transfer to take place. The Impossibility Theorem implies that the current economic system is not capable of handling resource scarcity (Daly, 1991; Daly & Townsend, 1993; Kilbourne et al., 2001; Kilbourne et al., 2002).

Current economic theory, using DSP guidelines, refers to price as the way to handle supply and demand of any given product, including environmentally related products. Entropy law provides the relationship to natural resources, in that once energy is consumed; the amount of available energy is reduced (Kilbourne et al., 2001). Further, if the use of the energy produces positive economic results, then society assumes the energy consumption is justified. By reducing natural resources to value through such methods as contingent valuation is a response to consumer need, but an irrational response to the process (O'Neill, 1993; Kilbourne

et al., 2002). Although this response may be irrational, the response has become necessary as society has demanded more economic justification. For example, as prices continue to rise at the gas pumps, justification to support this increase is provided in the rising costs of purchasing oil for fuel production. The consumer seeks to maximize their individual self-interest in expenditures, and as a result, everything has an economic value. According to Sagoff (1988) the reduction of aesthetic and natural value to instrumental or monetary value is a categorical mistake. However, in the Dominant Social Paradigm, justification of monetary value to the consumer creates less concern for the environment and permeates the current economic system of globalization, specialization, mass production, economic growth, competition, and the linear reductionist and mechanistic approach to science and society (Korhonen, 2002). Within industrial society, economic growth is the primary goal, regardless of its effect on the environment. Historically, economic growth may have more importance than human health and safety. Until legislation was passed which protected the worker, companies sought economic growth at almost any cost. The purpose of this is to create greater material well-being and prosperity for the individual.

Environmental Values

Examination of the literature relative to environmental value measures often leads to an extension or replication of Schwartz's norm activation model. The Schwartz model embraces an activation of norms toward helping, described as when an individual is aware that positive results will occur if a behavior is acted upon, then the individual ascribes responsibility for acting in that manner (Blamey, 1998). The three key components of the 56-item scale are defined as awareness of need (AN), awareness of consequences (AC) and awareness of responsibility (AR) (Schwartz, 1977; Schwartz & Howard, 1981; Blamey, 1998). Used initially for explaining individual helping behavior, this model has proved useful in an environmental context. To date, this model has been used to explain widespread changes in environmental attitudes, including yard burning behavior (Dunlap & Van Liere, 1978), consumer responses to the energy situation

(Black, Stern & Elsworth, 1985) and recycling behavior (Hopper & Neilsen, 1991). Additionally, this model has been used to help explain intended behavior with regard to chemical hazardous waste problems (Stern, Dietz & Black, 1986). Specifically, the model is useful when measuring or assessing pro-environmental behavior or attitudes. For many, the values associated with pro-environmental behavior are viewed as altruistic toward the natural environment.

The presumption is that preferences or attitudes toward objects, new or old, are created by individuals (Fischhoff, 1991; Payne, Bettman & Johnson, 1992) or through a social process (Douglas & Wildavsky, 1982; Snow, Rochford, Worden & Benford, 1986; Dietz, Stern & Rycroft, 1989). Use of the norm activation model has provided researchers with a deeper analysis relative to attitude formation (Rokeach, 1968, 1973; Schwartz, 1992). According to Dietz, Frisch, Kalof, Stern, and Guagnano (1995) the link to values is important in attitude formation toward new objects, because attitudes need to be built on something more stable, and value formations may provide the appropriate link. Attitude formation toward any object is associated with the individual values placed upon that object, action or association. The environmental movement or pro-environmental behavior is an object or action that requires an individual to assess such values, prior to committing the pro-environmental behavior. As with attitudes, values may be influenced by extraneous factors such as economics, politics or social beliefs. The assumption is that values provide an underlying guiding principle for life (Dietz et al., 1995). Using this assumption, values are likely to guide behavior when encountered with a new environmental or social condition.

To measure environmental values, Schwartz (1992) developed four broad clusters of value orientations, openness to change, self-enhancement, conservation, and self-transcendence. Openness to change refers to an individual's willingness to support changes in the status quo. These statements assess individual value in the individuals' belief on the need to change the status quo. From an environmental perspective, a change in the status quo is often presented as a necessary option when discussing global warming. Self-enhancement indicates

that an individual is concerned about themselves and how things affect them personally. These statements place every concern or value within the context of the individual. The conservative value orientation represents individuals who are satisfied with the status quo. These individuals are resistant to change. Lastly, individuals who score high on the self-transcendence value orientation are concerned about other individuals and the environment around them. They may be referred to as individuals who are altruistic.

Stern and Dietz (1994), in their study using values as a measure of environmental concern, found that their egoistic value orientation was similar to the self-enhancement cluster, and the social altruistic and biospheric orientations are similar to the self-transcendence cluster. Further research has focused on the altruistic-biospheric orientation and the egoistic orientation (Stern et al., 1995). In an attempt to achieve reliable measures of values using only a subset of items from Schwartz' scale, Stern, Dietz, and Guagnano (1998) presented items representing the altruistic-biospheric aspects within the self-transcendence orientation, and the egoistic aspects within the self-enhancement orientation. These items are more representative of environmental concern, and are most appropriate for this study. For this examination of the Schwartz norm activation model, the following clusters were examined: biospheric-altruistic, egoistic, openness to change, and conservation.

Biospheric-Altruistic

Social-altruistic values have been used in Schwartz's norm activation model (1977) as an underlying theory when studying environmental attitudes and behavior (Heberlein, 1972). Individuals who score high on the social-altruistic values cluster in the norm activation model experience a sense of moral obligation. These individuals will act upon their moral obligation if they believe their actions will help others. Those who act using these values judge phenomena on the basis of costs or benefits to a human group, such as a community or all of humanity (Stern & Dietz, 1994).

Ecologists refer to biospheric values as the ability of an individual to judge a phenomenon on the basis of costs or benefits to an ecosystem or biosphere (Stern & Dietz, 1994). Individual values toward the natural environment stimulate similar moral obligations as those measured using the altruistic value cluster in the norm activation model (Stern & Dietz, 1994). Previous studies that have attempted to measure the biospheric value cluster as a separate factor have been unsuccessful (Stern, Dietz & Guagnano, 1998). The biospheric value cluster, items that focus mainly on environmental issues, is assumed to be a separate cluster (Stern, Dietz & Guagnano, 1998). Yet, the limited use of the biospheric cluster as a separate cluster has prompted the name altruistic/biospheric cluster when measuring this value cluster. Further, environmentally-friendly behavior assumes altruism on the part of the consumer. Pro-environmental attitudes and behavior may be associated with those who exhibit altruistic behaviors.

Egoistic

Egoistic or the self-enhancement value orientation refers to values relative to individual self-interest (Schultz & Zelezny, 1998). Individuals who favor this value cluster predispose themselves to protect the aspects of the environment that may effect them personally (Stern & Dietz, 1994). This value cluster would support DSP values. Primary among DSP values is the pursuit of individual self-interest. In some instances, economic evaluations using this assumption, assume that only costs matter to individuals when estimating material costs relative to an environmental issue (Hammond & Coppock, 1990). Individuals who respond favorably toward the egoistic value orientation likely oppose public environmental regulations unless the environmental issue(s) affect them personally (Stern & Dietz, 1994). Further, the term **ego**istic implies a psychological orientation, suggesting that the individual is concerned with the environmental issue if it has a personal effect, not a societal effect (Stern, Dietz & Kalof, 1993). Similarly, it is assumed that if economic costs or the convenience of performing an environmental behavior is too high, that individuals who respond favorably toward this

orientation will not perform the behavior, regardless of their environmental concern. Essentially, pursuit of environmental concerns or behavior is dependent on the cost to the individual, or does the environmental pursuit fit within the individual's status quo? Individuals who are egoistic will likely support individual environmental issues, but may not exhibit an overall pro-environmental attitude or behavior.

Openness to Change

The openness to change value orientation reflects the degree to which an individual is motivated to follow his or her intellectual and emotional interests (Schwartz, 1992). Individuals who respond favorably toward this value orientation are more likely to seek an exciting lifestyle and be more receptive to liberal ideas regarding environmental issues. In theory, individuals would be receptive to necessary changes that would protect the environment. For example, individuals would likely be receptive to extensive changes in policy that would protect the environment, regardless of the outcomes on society or the individual. Additionally, individuals who respond favorably toward this value orientation are passionate about their support for change. For example, members of the pro-environmental organizations that protest and formally challenge the status quo would respond positively toward this value cluster.

Conservation

The conservative value orientation implies individuals want to maintain the traditional values or preserve the status quo (Schwartz, 1992). Previous studies have referred to this value orientation as the traditional value cluster (Stern et al., 1995). Individuals who respond positively toward this value cluster are unlikely to be receptive to changes; societal or environmental. In theory, an inverse relationship would be expected from these individuals toward issues regarding the environment and pro-environmental behavior. Further, individuals who respond positively toward this value orientation would likely support the traditional values described in the DSP. Primarily, these individuals would be expected to support economic growth and

prosperity regardless of the affect on the natural environment. Politically, this value cluster would support the conservative right-wing politics in the U.S.

Norm Activation Model

The predictive quality of the norm activation model for predicting environmental behavior or potential behavior has produced mixed results. Primary in each of the predictive studies is the use of a reduced scale model from Schwartz's 56-item scale. To begin, an examination of the shortened scale norm activation model(s) used in the environmental literature are presented. Following that, the predictive validity of each reduced scale is presented. Finally, the limitations and indications for future research using the norm activation model are presented.

Reduced Scale Models

Use of the norm activation model in environmental literature has produced several versions of Schwartz's 56-item scale. Each of these versions has been shorter, each with consistent reliability and validity coefficients. In Schwartz's 56-item scale, Schwartz (1992) described a structure that measured ten value types. These value types were configured into four higher order value orientations or clusters. Subsequent researchers have sought to shorten this scale for the following; administering a 56-item scale for many researchers requires, in many cases, financially prohibitive and unacceptable amounts of space and time onto a survey instrument, and only a modest effort has been made to validate the ten value types or the four value clusters developed by Schwartz (Stern et al., 1998). Further, researchers using this scale for the measurement of values toward the environment included only the items that applied to the purpose of their particular study. Thus, an instrument that is shorter in length, but that produces reliable and valid measurement scores would seem to be more efficient (Stern et al., 1998). Similarly, within the environmental literature, the shorter measurement instruments have garnered more use.

Stern et al., report insignificant differences in the measurement of the value clusters when using reduced scale items (1995). Stern et al. (1995), begin with a 34-item scale designed

to capture the four value orientations as set forth by Schwartz (1992). Further, for each study, slight wording differences were used in the items relative to Schwartz's 56-item scale. The difference took place in the opening statement for each item. For Schwartz, the opening statement read "As a guiding principle in my life" (Schwartz, 1992), for Stern et al. (1995) the opening instructions read "Please tell me how important each of these is as a guiding principle in your life." In an effort to allow for easier telephone comprehension by respondents, the likert rating scale was shortened from nine responses in the Schwartz (1992) version to seven responses in the 1995 study (Stern et al., 1995) and five responses in the 1994 unpublished study (Stern et al., 1994).

In the most drastic reduction, Stern, Dietz and Guagnano (1998) used a 12-item, three items per value orientation. The main purpose of this study was to assess environmental values toward new or emergent environmental issues (Stern et al., 1995) such as global warming. This study was an extension of their earlier work (Stern et al., 1995). Table 2 provides a visual analysis of the theta coefficients for each of the four configurations of the value scale. Closer examination of the theta coefficients indicates some slight differences in the 12 item scale from their original counterparts. However, the theta coefficient reported when the self-transcendence cluster is measured using six items (three for biospheric and three for altruistic) suggests that a 15 item scale is likely to produce reliable and valid results similar to a larger scale format (Stern et al., 1998).

In Schwartz's research (1992), the four higher order value orientations, self-transcendence, self-enhancement, conservation, and openness to change are assumed to lie along the axes of a two-dimensional space. One axis has self-transcendence and self-enhancement at opposite ends. Along the other axis, lies openness to change and conservation, at opposing ends (Schwartz, 1992). This structure appears similar to structures derived in previous empirical research (Braithwaite & Law, 1985; Crosby, Bitner & Gill, 1990). In 1994, Schwartz (1994) argued that factor analytic techniques would likely produce four

Table 2
A Visual Analysis of Shortened Norm Activation Scale Models that were used in Studies Completed by Stern et al. (1995), Stern et al. (1994, unpublished), and Stern et al. (1998), in their Assessment of how Values Affect Attitude Formation Regarding New Objects

Assessment Item	1995 Study (34 items)	1994 Study (unpublished) (34 items)	1998 short version review of 1995 data (12 items)	1998 short version of 1994 data (12 items)
Likert Response choices	7	5	7	5
Sample Size	199	420	199	420
Sample Population	Telephone sample of residents living in Fairfax, Virginia	Telephone Sample of U.S. Residents	Telephone sample of residents living in Fairfax, Virginia	Telephone Sample of U.S. Residents
Theta reliabilities for each of the four value orientations				
Self-Transcendence(Biospheric/Altruistic)	.89	.87	.69*	.66*
Self-Enhancement (Egoistic)	.74	.70	.70	.68
Openness to Change	.77	.63	.78	.63
Conservation/Traditional	.83	.83	.68	.69

*note: if a 15-item scale is used in which six items are used to provide/measure Biospheric/Altruistic value orientation, the theta reliabilities are .85 and .84, respectfully.

distinct but correlated factors. In Stern et al. (1995, 1998), the four value clusters, when analyzed using factor analysis, produced a measure of correlation. Consistent with Schwartz (1994), Stern et al. (1998) produced factor analytic results indicated the value clusters were dependent rather than bipolar.

The use of Schwartz's model (1992, 1994) for evaluation of environmental values has seen a reduction of scale size in determining these values (Stern et al., 1994, 1995, 1998; Schultz & Zelezny, 1998) in almost all cases. Consistent with research completed in an environmental context using the norm activation model, the full 56-item ten value type scale is not necessary in determining environmental values that are reliable and valid (Schwartz, 1994; Stern et al., 1998; Schultz & Zelezny, 1998). Inconsistent is the use of these value clusters as bipolar. The assumption is that the value clusters are independent. Research has indicated the

value clusters are correlated when used in a study with the purpose of predicting behavior (Schwartz, 1994; Schultz & Zelezny, 1998; Stern et al., 1998).

Predictability of Behavior

The value orientations of self-transcendence and self-enhancement have been used to predict environmental behavior or behavioral intention. For example, in Ewing's (2001) study using altruistic, egoistic values and normative effects and their interaction with curbside recycling behavior, individuals who scored higher toward the altruistic values were more likely to recycle. Individuals who scored higher in the egoistic values orientation were less likely to recycle, most probably due to the increased cost and inconvenience. The studies conducted by Stern et al. (1995, 1998) used the results of the value measurements to predict a specific type of environmental behavior. The criterion variables used in these analyses were pro-environmental consumer behavior, political behavior and a willingness to sacrifice behavior (Stern et al., 1998). For each, the predictive validity was virtually unchanged using the 12 item value scale, with the exception of political behavior (Stern et al., 1998). For this criterion, openness to change indicated a more significant relationship within the 12 item scale when compared with the longer scales (Stern et al., 1998).

Evidence in the United States suggests that consumers are not very willing to respond to their environmental concern by spending money (Wasik, 1992). Further, a Roper Organization study (1991) reported that, on average, the consumer is willing to pay only six-seven percent more for eight hypothetical "green" products. Likewise, 44% of Canadians have indicated they are not willing to pay for extra emission costs attached to new vehicles (Ewing & Sarigollu, 1999). These examples suggest egoism provides a strong influence over pro-environmental behavior for the consumer, in particular, if personal economic impact is expected. This evidence suggests that altruism may have only a minor role in the behavioral choices of consumers.

Limitations and Assumptions of the Norm Activation Model

The use of the norm activation model (Schwartz, 1992) has provided a theory-based approach to measuring values based on environmental issues. However, certain limitations exist when using this model. In environmental values research, a shortened version of the Schwartz scale (Stern et al., 1995, 1998; Schultz & Zelezny, 1998) has most often been used. Although in each of the studies cited, the reliability and validity coefficients were acceptable, using a shortened version of the scale may misrepresent the intent of Schwartz's original 56-item scale. Second, use of the shortened scales has been inconsistent in both size of the shortened scale and items chosen for the shortened scale. This inconsistency in the items chosen and the length of the scale is potentially limiting. Consistency in the scale length and items chosen for measurement may provide more reliable and valid value orientation estimates. The effect of consistent scale length and items used may also affect the predictive validity.

Additionally, the assumption using the Schwartz norm activation model (1992) such that the four higher order clusters are independent, yet correlated, is a limitation that may be explained by an individual response phenomenon. The phenomenon states that some people will give a consistently higher rating within a likert scale format than others (Stern et al., 1998). In the shortened scales, this phenomenon would have less effect on the polarity of the value clusters. In fact, researchers would likely expect the value clusters to have some measure of correlation in the reduced scale models, therefore undermining a basic assumption of the original scale.

In review, much of the research using this model has focused on the altruistic, biospheric, and egoistic portion of Schwartz's model. Individuals are assumed to behave in a manner consistent with their value structure. In most cases, the egoistic cluster of values produces an inverse relationship relative to pro-environmental behavior (Schultz & Zelezny, 1998; Stern et al., 1998). The altruism and biospheric cluster, commonly known as self-transcendence, produces a positive relationship with pro-environmental behavior (Schultz &

Zelezny, 1998; Stern et al., 1998; Ewing & Sarigollu, 1999). In this cluster, researchers have attempted to treat altruism and bioshperic values as separate value types (Stern et al., 1995; Schultz & Zelezny, 1998) but have had little success. However, the belief that altruism and biospheric values represent different value orientations, and that an individual may indeed respond differently in attitude and behavior, exists within the research (Schwartz, 1994; Stern et al., 1995).

Environmental Attitudes

Although several measurement instruments exist, the scale used most often to assess environmental attitudes is the New Environmental Paradigm (NEP) (Dunlap & Van Liere, 1978; Dunlap et al., 2000). This scale was designed to measure the change in social attitudes toward the environment in the 70s and 80s after the environmentalism movement had begun. Further, this scale purports to represent a measurement of paradigm change in individual attitudes toward the environment from the DSP to the New Environmental Paradigm. The following topics will be examined; the New Environmental Paradigm and the revised version of the NEP, and an analysis of the environmental attitude-behavior relationship as measured by both versions of the NEP.

The New Environmental Paradigm

The New Environmental Paradigm (NEP) scale was developed to measure respondent attitude's toward preserving the balance of nature, limits to growth, achievement of a steady-state economy and the need to reject the anthropocentric attitude toward nature (Dunlap & Van Liere, 1978). The NEP assumes that environmentalism challenges the most basic views about nature and the relationship that exists between humans, animals, and the natural environment (Dunlap & Van Liere, 1978). Theoretically, the scale proposes to place the same values on the natural resource as on human life. The NEP attempts to understand humans as part of the natural world. The NEP asserts that humans have a responsibility to use natural resources wisely; and that technology is a double-edge sword (Arcury & Christianson, 1993). To view this

properly, Dunlap and Van Liere (1978) refer to the “spaceship” metaphor. Are we really outgrowing the planet? These beliefs are said to represent a new paradigm that focuses on the broader issues of the physical environment (Dunlap & Van Liere, 1978; Albrecht, Bultena, Hoiberg & Novak, 1982; Geller & Lasley, 1985; Noe & Snow, 1991; Shetzer, Stackman & Moore, 1991). Conceptually, the NEP represents change(s) needed in the status quo for the planet and human life to be sustained.

Dunlap and Van Liere (1978), in their development of the NEP scale, constructed the scale on the careful consideration of NEP-oriented literature, aided by the suggestions of knowledgeable individuals. The scale items were designed to measure the constructs in an effort to achieve content validity. The items were arranged in a likert measurement scale with possible responses ranging from strongly agree to strongly disagree in either a five-point or seven-point likert format. In the original scale, the directionality of the items is not proportionate. Critics of this scale have indicated this to be a potential measurement issue.

The Revised New Ecological Paradigm

Dunlap, Van Liere, Mertig and Jones (2000) developed a revised NEP scale to address the directional imbalance, and to update and broaden the scale’s content. A look at the changes in the NEP scale items is provided in Table 3. To accommodate for the reference to “ecological” problems as opposed to “environmental” problems facing the modern world (Dunlap, Van Liere, Mertig & Jones, 2000) the authors chose to call the revised NEP the “New Ecological Paradigm.” One noticeable difference in the two scales is the increase in the number of items from the original scale.

Items were added or revised to address the idea of “human exemptionalism,” the idea that humans are unlike any other species and are seen as exempt from the laws of nature (Dunlap & Catton, 1994; Dunlap, Van Liere, Mertig & Jones, 2000). Since the original version, environmental issues such as ozone depletion, climate change, and human-induced global environmental change prompted the addition or revision of items to include statements

regarding potentially catastrophic environmental changes (Dunlap, Van Liere, Mertig & Jones, 2000). Additionally, items were worded so that for eight of the items a positive response reflected a pro-ecological worldview, and for seven items a negative response reflected a pro-ecological worldview.

Table 3
Presented Below is a List of the Scale items that are Found in the New Environmental Paradigm and the New Ecological Paradigm

New Environmental Paradigm (Dunlap & Van Liere, 1978)	**New Ecological Paradigm** (Dunlap, Van Liere, Mertig & Jones, 2000)
We are approaching the limit of the number of people the earth can support.	We are approaching the limit of the number of people the earth can support.
The balance of nature is very delicate and easily upset.	Humans have the right to modify the natural environment to suit their needs.
Humans have the right to modify the natural environment to suit their needs.	When humans interfere with nature it often produces disastrous consequences.
Mankind was created to rule over the rest of nature.	Human ingenuity will ensure that we do NOT make the earth unlivable.
When humans interfere with nature it often produces disastrous consequences.	Humans are severely abusing the environment.
Plants and animals exist primarily to be used by humans.	The earth has plenty of natural resources if we just learn how to develop them.
To maintain a healthy economy we will have to develop a “steady state” economy where industrial growth is controlled.	Plants and animals have as much right as humans to exist.
Humans must live in harmony with nature in order to survive.	The balance of nature is strong enough to cope with the impacts of modern industrial nations.
The earth is like a spaceship with only limited room and resources.	Despite our special abilities humans are still subject to the laws of nature.
Humans need not adapt to the natural environment because they can remake it to suit their needs.	The so-called “ecological crisis” facing humankind has been greatly exaggerated.
There are limits to growth beyond which our industrialized society cannot expand.	The earth is like a spaceship with very limited room and resources.
Mankind is severely abusing the environment.	Humans were meant to rule over the rest of nature.
	The balance of nature is very delicate and easily upset.
	Humans will eventually learn enough about how nature works to be able to control it.
	If things continue on their present course, we will soon experience a major ecological catastrophe.

With these changes, the new ecological paradigm represents four environmental facets, balance of nature, limits to growth, anti-anthropocentrism and human exemptionalism (Dunlap, Van Liere, Mertig & Jones, 2000).

New Environmental Paradigm in Practice

In the initial use of the NEP, the authors were attempting to measure an overall environmental attitude, perhaps a worldview (Dunlap & Van Liere, 1978). Further, they treated the scale as if it measured one dimension; the emerging environmental paradigm, NEP (Dunlap and Van Liere, 1978). Although four constructs are measured in the scale, the authors assumed that the measurement of these constructs represents a larger concept; the new environmental worldview.

One of the more widely debated aspects of the original NEP is the number of dimensions the scale represents. As Dunlap, Van Liere, Mertig and Jones (2000) state "while the bulk of available evidence converges to suggest the overall validity of the NEP scale, there is far less consensus on the question of whether the scale measures a single construct or is inherently multi-dimensional." For example, the original NEP scale can separate into two (Scott & Willits, 1994; Gooch, 1995), three (Shetzer, Stackman & Moore, 1991), four (Roberts & Bacon, 1997; La Trobe & Alcott, 2000), or even five dimensions (Geller & Lasley, 1985). This aspect of the NEP is not likely to change within the revised version, as even Dunlap, Van Liere, Mertig and Jones (2000) found five factors. Research has shown original scales known group validity with pro-environmental samples to be significantly higher (Widegren, 1998).

Numerous studies found significant relationships between the NEP scale and an assortment of behaviors or behavioral intentions, including self-reported and observed behaviors (Vining & Ebreo, 1992; Scott & Willits, 1994; Stern, Dietz & Guagnano, 1995; Schultz & Oskamp, 1996; Roberts & Bacon, 1997; Tarrant & Cordell, 1997; Schultz & Zelezny, 1998). However, the predictive validity of the original scale toward actual behavior or behavioral intentions has produced mixed results (Kaiser, Wolfing & Fuhrer, 1999). Similarly, Widegren's

(1998) study indicated low correlations between the NEP scale and pro-environmental behavior and willingness to pay relative to environmental issues. Likely the mixed predictive results can be attributed to the original scale's measure of a general environmental attitude, rather than toward a specific environmental issue.

Additional work has included research using the revised version of the New Environmental Paradigm (Dunlap, Van Liere, Mertig, Catton & Howell, 1992). For example, the revised version has been used to measure the awareness of consequences value orientation (Stern, Dietz & Guagnano, 1995; Schultz & Zelezny, 1998). In the research study conducted by Stern, Dietz, and Guagnano (1995), a correlation coefficient of r=.78 is reported between scores on the NEP and a general awareness of the consequences value scale. The NEP and the awareness of consequences value scale are used to predict behavior or behavioral intention in this study. Additionally, Cordano, Welcomer and Scherer (2003) used the revised NEP, the original NEP, and a non-NEP based measure of environmental concern to examine the predictive relationship of each toward intended pro-environmental behavior. This abbreviated NEP scale was used in previous studies (Roberts & Bacon, 1997; Schultz & Zelezny, 1998). Results of these studies indicate the original NEP, and the abbreviated portions of the original NEP, explained more variance in the predictive model than the revised NEP (Cordano, Welcomer & Scherer, 2003). Yet, neither of the models provided valid prediction of behavior or behavioral intentions.

Limitations and Assumptions of the NEP

Of primary importance among the limitations regarding the NEP is the determination of what constructs the NEP measures. In the literature, the NEP is purported to represent a new worldview (Dunlap & Van Liere, 1978; Dunlap et al., 2000), a measure of the awareness of consequence value orientation (Stern, Dietz & Guagnano, 1995), a measure of environmental beliefs (Kempton, Boster & Hartley, 1995), and a measure of an attitude (Dunlap & Van Liere, 1978; Arcury, 1990). In support of the NEP is construct validity evidence that theorizes that the

NEP forms the primary component, along with fundamental values, of an environmental belief system (Pierce, Lovrich, Tsurutani & Takematsu, 1987). Non-support for the NEP in terms of construct validity is the lack of evidence to confirm a paradigm shift (Kilbourne et al., 2001). According to at least two studies, the NEP is little more than a general attitude scale supporting a paradigm shift (Latrobe & Alcott, 2000; Kilbourne et al., 2001; Kilbourne et al., 2002). Further, for a paradigm shift to have occurred, the original paradigm would have to be considered in a crisis state before a shift can occur.

An additional limitation with the original and revised NEP scale is the predictive validity of the scale toward behavior and intended behavior. To begin, at least three reasons exist as to why attitudes may be an inadequate predictor of behavior: 1) a lack of specificity or congruence between attitudinal and behavioral measures (Weigel & Weigel, 1978; Ajzen & Fishbein, 1980; Shetzer, Stackman & Moore, 1991; Scott & Willits, 1994); 2) dependence on a "poor quality attitude measure" (Weigel, 1983); and 3) the non-recognition of influential external factors on behavioral prediction (Fishbein & Ajzen, 1977). Limited research has been done using the NEP to predict behavior when individual costs for pro-environmental behavior is determined, or the amount of inconvenience is specified (Kilbourne et. al, 2001). Previous research studies in which the NEP was used to predict behavior or behavioral intent has produced mixed results (Kilbourne et. al, 2001).

Environmental Behavior

Previous research regarding environmentally or ecologically conscious behavior has yielded a confusing picture (Berger, 1997). For example, Berger and Corbin (1992) examined the attitude behavior relationship during the energy crisis of the 1970s and found that consumers were concerned about saving energy, but their behavior was inconsistent with this concern. The ultimate goal of environmental behavior is to induce people to take conservation type actions and to reduce their environmental impact (Olson, 1981). What has been difficult to determine in the pro-environmental behavior literature is that which makes a person behave

ecologically responsibly. Mediating factors regarding ecologically responsible behavior and consumer behavior include pro-environmental attitudes, values, beliefs, social influences, and economics. The purpose of this section is to examine behavior scales used to measure consumer behavioral patterns and to discuss limitations on collecting data regarding consumer behavior.

Environmental Consumer Behavior Measurement Instruments

In environmental psychology, measurement instruments of pro-environmental behavior have been primarily developed by the researcher (Gatersleben, Steg & Vlek, 2002). Some studies focus on individual environmental behavior such as recycling (Guagnano, Stern & Dietz, 1995) or support of an environmental organization (Stern, Dietz, Kalof & Guagnano, 1995), while other scientists have developed scales that measure a combination of different behaviors (Berger, 1997; Roberts & Bacon, 1997). The scales focusing on the combination of different behaviors yield a more general environmental behavior pattern than specific behavior scales. Still, other studies focus on relatively uninteresting variables that have little effect on energy and material use (Stern, Dietz, Ruttan, Socolow & Sweeney, 1997). An example of the latter behaviors would include refusing plastic bags or the purchase of recycled paper. For the purposes of this study, a behavior scale which measures a combination of different environmentally-friendly behaviors was used.

A review of the Ecologically Conscious Consumer Behavior (ECCB) scale (Roberts, 1991; Shetzer, Stackman & Moore, 1991) is presented (Roberts & Bacon, 1997). The purpose of this measurement instrument assumes that progress toward solving environmental problems depends on ecologically conscious consumer behavior, more than a measure of environmental concern. In general, the ECCB represents six factors. They are (Roberts & Bacon, 1997):

- use of recycled products,
- driving habits to reflect the dependency on oil,
- general recycling issues and biodegradability,

- consumer purchase decisions and how environmental concerns may enter this process,
- reducing the amount of electricity used,
- saving electricity by using small wattage bulbs.

Roberts and Bacon (1997) focused on the relationship of consumer behavior to individual environmental concern. Results of this study indicate that consumers who feel humans should live in balance with nature (NEP scale), will choose products that create less pollution, make efforts to recycle and limit their use of scarce resources. This finding indicates that knowledge, in particular greater environmental knowledge, influences consumer decisions regarding pro-environmental items. Similarly, the results indicate that as consumers show more technical understanding of environmental issues, the more likely these consumers will behave in a pro-environmental fashion (Roberts & Bacon, 1997).

Berger (1997) reports on the demographics of recycling and how other types of environmental behavior are related to recycling. Prior to this study, few researchers had examined the relationship of related pro-environmental behaviors such as recycling, resource conservation, and pesticide use. Initial results indicate that, of the Canadian population examined, approximately 50% of Canadians have access to recycling programs. Of the 50% that have access to recycling programs, 80% do recycle (Berger, 1997). Results of the analysis indicate that recycling behavior is positively related to energy conservation, water conservation, and other consumer behaviors, such as buying recycled paper, composting, and providing their own shopping bag. As a result of the analysis, two implications are made. First, environmentally responsible behavior appears structured in terms of issues and activities. Second, recycling is correlated with other pro-environmental behaviors that are within individual control. This is consistent with supermarket sales of environmentally friendly products which are stronger in areas that have a recycling program (Carson, 1996).

Gatersleben, Steg and Vlek, (2002) measured environmentally significant behaviors using two methods, an intent-oriented measure and an impact-oriented measure. The intent-

oriented measure examines behavior that is important from the respondent point of view, such as recycling. The impact-oriented measure examines actual environmental impact of behavior such as energy or water usage. The impact-oriented measure analyzes the direct and indirect usage of behavior that might significantly effect the environment. Direct behavior refers to use of energy such as natural gas, electricity and auto fuel used by the individual or household directly. Indirect behavior refers to energy use by the segment of the population that produces and delivers goods to the consumer. Results indicate that pro-environmental behaviors are related to attitudinal variables. Further, energy use appears to be strongly related to household size and household income. Methodologically, the measure of household direct and indirect energy use provides a valuable instrument to examine environmental impact. A limitation to using this method is survey length. There are five advantages to using this measurement instrument:

- it is environmentally significant,
- it provides better and perhaps more accurate information for scientists and policy makers,
- the method can be applied to already existing files,
- the question items are more specific than typical self-report measures,
- it could use the methodology for additional studies.

Limitations and Assumptions

Research on environmental behavior is not without limitations. To begin, self-report variables have at least four factors that can lead to discrepancies between reported behavior and actual consumption patterns (Olson, 1981). First, a respondent may report inaccurately about their behavior. Factors such as social desirability and other types of conscious or unconscious decisions regarding their behavior may lead to inaccurate reporting of behavioral patterns (Gatersleben, Steg & Vlek, 2002). However, socially desirable responses are only a marginal factor in the inaccuracy of reporting (Kaiser, Wolfing & Fuhrer, 1999). Second,

respondents may not always be aware of the environmental consequences associated with their behavior and may unknowingly misrepresent their behavior (Gatersleben, Steg & Vlek, 2002). This may be due to lack of environmental knowledge by the respondent. Third, a person who performs a behavior that creates very little environmental impact usually receives the same score within a measurement scale as a person who performs a behavior of great environmental impact. Finally, sum scores of self-reported environmental behavior are often computed without assessing the environmental impact of an individual behavior.

A further limitation is the lack of research available that examines the relationship(s) of environmental behaviors. Berger (1997) examined recycling behavior and determined that an individual performs behaviors similar to their environmental issues and concerns. Previous research has generally focused on a specific environmental behavior. Within most of these studies, researchers examined behavioral variables that have a small environmental impact (Stern, Dietz, Ruttan, Socolow & Sweeney, 1997).

Lastly, scales measuring environmental behavior have generally been developed by the individual researcher(s) (Gatersleben, Steg, & Vlek, 2002). These scales reflect the interest of the given research study. Simply, researchers are using statistical techniques, such as factor analysis, to develop a scale to measure pro-environmental behavior. Consistency between behavior scales is needed to provide a meaningful measure of environmental behavior or intended behavior. The behavioral items in the scale(s) should be examined for definition and acceptance universally. Consistent development of environmental behavior scales may also aid researchers in developing scales that produce stronger measures of environmental behavioral issues, such as energy use, use of fossil fuels, and recycling.

CHAPTER 3

SURVEY METHODOLOGY AND MEASUREMENT PROCEDURES

This chapter describes the methodological and measurement issues used in this study. Previous studies examining societal concepts and the relationship of these concepts to behavior have produced methodological inconsistencies. The topic areas to be addressed in this chapter include; sampling procedures, data collection instrument (see Appendix A), analysis procedures, and the measurement limitations that were expected in this study.

Sampling Procedures

The study procedures were similar to those used in Kilbourne (2001). The sample for this study was college students who attend Mount Olive College, in Mount Olive, North Carolina. The respondents were selected on a convenience basis and were not compensated for their participation. Traditional students as well as non-traditional students were eligible to participate. Traditional students are defined as students who attend college full-time and take classes that primarily meet during the day time hours. Non-traditional students are defined as students who take classes at night or in an accelerated format. The total sample size for this study was 291. The estimated sample size needed to complete the study and provide meaningful results was 250 students, based on the traditional method of statistical significance (NEED REFERENCE). Mount Olive College is considered a liberal arts institution and the study participants are expected to have a liberal arts background or interest.

The data collection method to obtain a convenience sample is an in-class delivery technique. To select the classes that were used for sampling, the following procedures were completed. First, all of the classes at the Mount Olive location, traditional and non-traditional were placed in numerical order. Second, each number was placed in the proverbial “hat” and fifteen classes were selected at random by drawing the class number from the “hat.” From the

fifteen classes chosen, a class was accepted for sampling if the class was an in-class delivery section and the class was meeting during the sampling period. The sampling period occurred during the month of November, 2006. Classes at Mount Olive College, in particular the non-traditional classes do not follow the traditional semester timeline. For example, internet classes typically meet for five-week periods of time. The non-traditional classes are taught in modular format, which basically means that a modular class meets one-night each week during the course of the year, rotating courses every five weeks until the program is complete. Thus, the modular classes selected for the study were based on the number of modular classes in session during the time of data collection. Independent study and internet classes were eliminated from the study.

All students in each class were eligible for participation in the study. Students were provided with the confidentiality statement and were asked to identify themselves if they did not want to participate in the study. Also, the interviewer asked in each class that if a student had completed this survey in another class to please refrain from completing the survey a second time.

Interviewers were students who were on academic scholarship at the college. Approximately five different interviewers were used to collect the data. The primary researcher refrained from the data collection because of his professor/coach status on campus and the possible conflict relative to the professor/student relationship. Using students to administer the survey helped to insure that participation was both voluntary and anonymous.

To collect the data, the researcher contacted the professor for each class selected to receive permission for student interviewer to meet with their class during a scheduled class time to collect the data. If the professor of a class indicated they did not want their class to participate in the study, then this class was left out of the sample. All professors agreed to have an interviewer survey their class. The average class time used to collect the data was 15 minutes. The questionnaires were distributed during an identified class period and the respondents were

asked to complete the survey and return it to the individual(s) administering the survey. Attached to the survey was a confidentiality statement, (see Appendix B). Further, the student interviewers were given a statement for introducing themselves and their purpose in the classroom. A copy of this statement is attached in Appendix C. The interviewers were not provided any training. They were asked to follow the script and to present the information letter and confidentiality statement.

Data Collection Instrument

To assess the objectives in this study, the survey questionnaire included Dominant Social Paradigm (DSP) items from Kilbourne et al. (2002), the revised New Environmental Paradigm, (Dunlap et al., 2000), a list of specific environmental problems (SEP) items (Kilbourne, 2002), the reduced norm-activation model (Schwartz, 1992) created by Stern, Dietz and Guagnano (1998) and the Ecologically Conscious Consumer Behavior scale (Roberts & Bacon, 1997) and a brief demographic section. To begin, items representing the DSP, the NEP and the specific environmental problems items were combined to form a list of forty-one questions. Simply, these items were placed together within the survey because each scale used the same agree/disagree likert scale measurement structure. To combine the survey items, an item from each scale were randomly selected and then listed until all items from each scale had been placed in the survey. This concluded the first section of the questionnaire.

The survey questionnaire items in the first section of the survey contained the following items. To measure the DSP, the items from the Kilbourne et al. (2002) study were used to measure the respondents on items pertaining to the Dominant Social Paradigm and the three measurements constructs of political, economic, and technological. Further, the specific environmental problem items used in the Kilbourne, et al (2002) study were used. To measure the NEP, the items representing the revised NEP (Dunlap, et. al, 2000) were used. These items were chosen due to the equal number of pro and con environmental statements with the scale and the items representation to today's society versus the original NEP scale. Table 4 provides

a list of the first forty-one items within the survey, identifying which scale and construct each item represents. The questionnaire items in the table are in numerical order as shown in the survey. Constructs are not identified or listed for items representing the NEP. The revised NEP is thought to be a one-factor scale. Previous research suggests that little consistency in the constructs has been obtained, thus for the purposes of this study, the scale is assumed to represent one construct or one worldview.

Table 4
The First Forty-one items listed in the Survey Indicating the Scale and Construct each Item Represents

Questionnaire Item	Scale represented	Construct within the scale
1. We are approaching the limit of the number of people the earth can support.	NEP	
2. Global warming is not really a problem.	SEP	Enviromental Problems
3. Advanced technology provides us with hope for the future.	DSP	Technology
4. Future resource shortages will be solved by technology.	DSP	Technology
5. The problems related to ozone depletion are overstated.	SEP	Environmental
6. Humans have the right to modify the natural environment to suit their needs	NEP	
7. Advancing technology is out of control.	DSP	Technology
8. Our present rate of consumption can be maintained with no ecological problems	SEP	Environmental
9. When humans interfere with nature it often produces disastrous consequences.	NEP	
10. Since the volume of water on the earth doesn't change, shortages cannot occur.	SEP	Environmental
11. The average person should have more input in dealing with social problems.	DSP	Political
12. Human ingenuity will insure that we do NOT make the earth unlivable.	NEP	
13. Humans are severely abusing the environment.	NEP	
14. World population levels are well within what the world can support.	SEP	Environmental
15. Business interests have more political power than individuals.	DSP	Political
16. Political equality can be attained only by major changes in election procedures.	DSP	Political
17. The earth has plenty of natural resources if we just learn how to develop them.	NEP	

18. Agricultural productivity will decline in the near future.	SEP	Shortages
19. Plants and animals have as much right as humans to exist.	NEP	
20. Political questions are best dealt with through free market economics.	DSP	Political
21. Food shortages are possible in the near future, even in developed countries.	SEP	Shortages
22. We focus too much on economic measures of well-being.	DSP	Economic
23. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	NEP	
24. Serious shortages of some natural resources will occur in the near future.	SEP	Shortages
25. Individual behavior should be determined by economic self-interest, not politics.	DSP	Economic
26. Despite our special abilities humans are still subject to the laws of nature.	NEP	
27. Continued use of chemicals in agriculture will damage the environment beyond repair.	SEP	Shortages
28. The so-called “ecological crisis” facing human kind has been greatly exaggerated.	NEP	
29. The best measure of progress is economic.	DSP	Economic
30. Some living things are unnecessarily threatened with extinction.	SEP	Extinctions
31. If the economy continues to grow, everyone benefits.	DSP	Economic
32. The earth is like a spaceship with very limited room and resources.	NEP	
33. Destruction on rainforests will have long term environmental consequences.	SEP	Extinctions
34. Humans were meant to rule over the rest of nature.	NEP	
35. Many types of pollution are rising to dangerous levels.	SEP	Extinctions
36. The balance of nature is very delicate and easily upset.	NEP	
37. The bad effects of technology outweigh its advantages.	DSP	Technology
38. Humans will eventually learn enough about how nature works to be able to control it.	NEP	
39. Nuclear accidents causing long term damage are likely in the future.	SEP	Nuclear
40. If things continue on their present course, we will soon experience a major ecological catastrophe.	NEP	
41. Nuclear power is the solution to energy shortages.	SEP	Nuclear

Section two of the survey is the norm-activation model scale. A twelve-item version of this scale was chosen for this study. The twelve-item version of the scale was chosen because of its ability to measure effectively the concepts within the scale and it is shorter. The survey length was a concern in development with the number of scales being measured. Further, research has indicated that the twelve-item version of this scale has similar coefficient r-square scores as that longer fifteen item or eighteen item version (Stern et. al, 1998). These items were not included in section one due to the measurement scale. These values are measured on a "not important" to "extremely important" scale. Table 5 provides a visual look at each item in the scale and the construct that each item represents.

Table 5
The List of the Survey Items that Represent the Norm Activation Model Value Scale in Section Two of the Survey, Listed According to Value Orientation; Each Statement Followed the Opening of "Please tell me how important each of these is as a guiding principle in YOUR life…

Questionnaire Item	Construct or Value Orientation
1. Protecting the environment, preserving nature	Biospheric/Altruistic
2. A world at peace, free of war and conflict	Biospheric/Altruistic
3. Social justice, correcting injustice, care for the weak	Biospheric/Altruistic
4. Honoring parents and elders, showing respect	Conservation
5. Family security, safety for loved ones	Conservation
6. Self-discipline, self-restraint, resistance to temptation	Conservation
7. Authority, the right to lead or command	Egoistic
8. Influential, having an impact on people and events	Egoistic
9. Wealth, material possessions, money	Egoistic
10. A varied life, filled with challenge, novelty, and change	Openness to Change
11. An exciting life, stimulating experiences	Openness to Change
12. Curious, interested in everything, exploring	Openness to Change

In section three of the survey, individual environmental behavior patterns were measured using the Ecologically Conscious Consumer Behavior (ECCB) scale (Roberts & Bacon, 1997). The purpose of using the behavior scale was to measure individual environment behavior to assess the predictive relationships of the DSP, NEP and Norm Activation Model with the behavior patterns represented by the ECCB. The ECCP purports to measure six constructs or six different environmental behavior patterns. They are: use of recycled products, driving habits to reflect dependency on oil, general recycling issues and biodegradability, consumer

purchase decisions and how environmental concerns may enter this process, reducing the amount electricity used, and saving electricity by using small wattage bulbs. The items and the behavioral patterns they represent are listed in table 6.

Table 6
The List of the Survey Items that Represent the ECCB Scale in Section Three of the Survey, Listed According to Behavioral Pattern

Questionnaire Item	Behavioral Pattern
1. I buy toilet paper made from recycled paper.	Consumer Purchase
2. I buy Kleenex made from recycled paper.	Consumer Purchase
3. I buy paper towels made from recycled paper.	Consumer Purchase
4. To save energy, I drive my car as little as possible.	Driving Habits/Oil Dependency
5. To reduce our reliance on foreign oil, I drive my car as little as possible.	Driving Habits/Oil Dependency
6. I make every effort to by paper products made from recycled products.	Recycled Products
7. I use a low phosphate detergent (or soap) for my laundry.	Recycled Products
8. I have convinced members of my family or friends not to buy some products which are harmful to the environment.	Recycled Products
9. Whenever possible, I buy products packaged in reusable containers.	Recycled Products
10. I try only to buy products that can be recycled.	Recycled Products
11. I normally make a conscious effort to limit my use of products that are made of or use scarce resources.	Biodegradability
12. I will not buy products which have excessive packaging.	Biodegradability
13. When there is a choice, I always choose that product which contributes the least amount of pollution.	Biodegradability
14. If I understand the potential damage to the environment that some products can cause, I do not purchase those products.	Biodegradability
15. I have switched products for ecological reasons.	Biodegradability
16. I have purchased products because they cause less pollution.	Biodegradability
17. I do not buy products in aerosol containers.	Biodegradability
18. When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.	Biodegradability
19. When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.	Biodegradability
20. I will not buy a product if the company which sells it is socially irresponsible.	Biodegradability
21. I usually purchase the lowest-priced product, regardless of its impact on society.	Biodegradability
22. I do not buy household products that harm the environment.	Biodegradability
23. I try to buy energy-efficient household appliances.	Reduction in Electricity
24. I always try to use electric appliances (e.g. dishwasher, washer, and dryer) before 10am and after 10pm.	Reduction in Electricity

25.	I have tried very hard to reduce the amount of electricity that I use.	Reduction in Electricity
26.	I buy high-efficiency light bulbs to save energy.	Small Wattage Bulbs
27.	I have purchased a household appliance because it uses less electricity than other brands.	Small Wattage Bulbs
28.	I have purchased light bulbs that were more expensive but saved money.	Small Wattage Bulbs
29.	I have replaced light bulbs in my home with those of similar wattage so that I will conserve on the electricity that I use.	Small Wattage Bulbs

Use of the ECCB scale will allow for general and specific environmental behaviors to be assessed. Further, the specific environmental behaviors associated with this scale are consistent with popular concerns in the media.

The final section of the survey seeks to ascertain pertinent demographic information on the respondents. Due to the length of the survey, demographic questions were kept to a minimum. The most essential demographic information needed for this study was, gender, age, student status, full-time or part-time, year in school, major, racial or ethnic background, place of residence, work status and income. Collecting information from both traditional and non-traditional students required the information regarding work status and income level. Further, admissions indicated that a significant number of traditional students at Mount Olive College were from backgrounds that are economically challenged and thus the income level of each student interviewed became important. Further, the basis of the study focuses on an economic component that suggests economic status may affect environmentally protective behavior.

Content validity was assessed using peer review of the final survey instrument. Other than some minor editing, no concerns were expressed during the peer review. Further, a pre-test of the survey was conducted using identical data collection procedures used in the main study to examine potential data collection issues. Approximately 25 interviews were collected in the pre-test. The primary purpose of the pre-test was to examine the survey data collection method and to estimate the length of time to complete the survey. Based on the pre-test, the

estimated time to complete the survey was ten minutes. This pilot study used the same data collection procedures as the study instrument. The purpose of the pilot test was to determine the approximate length of time to complete the study. Statistically, no analyses were completed due to the small number of questionnaires collected.

Analysis Procedures

In this section, the analysis procedures for the study are examined. To begin, descriptive statistics and item analysis techniques, including the correlation and covariance matrices, were used to identify any potential measurement errors. Following the descriptive analysis, confirmatory factor analysis procedures were conducted on each scale used in the study. Confirmatory factor analysis procedures were chosen as each scale has been used previously and factor structures specific to each scale are expected. The factor analysis procedure used principle axis factor techniques with a varimax rotation. The confirmatory factor analysis procedures provide a measure of construct validity within the respective scales. For example, item loadings on the ECCB should be similar for this study as for those found in the study conducted by Roberts and Bacon (1997). For the DSP, an individual is considered to be high on the DSP if they scored high on at least two of the three dimensions. Similarly, an individual is considered to be low on the DSP if they scored low on at least two of the three dimensions. This is consistent with Kilbourne's study (2002). For each scale, item loadings should be consistent with their respective constructs. Further, the results of the confirmatory factor analysis procedures should be consistent with previous research.

To analyze the hypotheses, multiple regression procedures were used to determine the relationships specified in each hypothesis. Table 7 provides a visual look at the independent and dependent variables that were used for analysis in each hypothesis.

Following the analysis procedures to test each hypothesis, two final tests were completed. First, a multiple regression model was tested to determine the degree to which the DSP may influence individual behavior and attitudes. To complete this analysis, a comparison of

the multiple regression coefficients from the full model and the reduced models was completed. The dependent variables in the full model are the DSP and the environmental and value

Table 7
A List of the Independent and Dependent Variables that were used in the Multiple Regression Analyses for the Test of Hypotheses One to Seven

Hypothesis	Independent Variables	Dependent Variables
Hypothesis One	Dominant Social Paradigm (political, economic, technological)	Norm Activation Model—biospheric/altruistic and openness to change value clusters
Hypothesis Two	Dominant Social Paradigm (political, economic, technological)	Norm Activation Model—egoistic and conservation value clusters
Hypothesis Three	Norm Activation Model--Biospheric/altruistic and conservation value clusters	New Environmental Paradigm and the specific environmental issues
Hypothesis Four	Norm Activation Model--Egoistic and conservation value clusters	New Environmental Paradigm and the specific environmental issues
Hypothesis Five	Dominant Social Paradigm (political, economic, technological)	New Environmental Paradigm and the specific environmental issues
Hypothesis Six	Dominant Social Paradigm (political, economic, technological)	The Ecological Conscious Consumer Behavior scale and each of the scales six constructs
Hypothesis Seven	New Environmental Paradigm and the specific environmental issues and each value cluster within the Norm Activation Model	The Ecological Conscious Consumer Behavior scale and each of the scales six constructs

clusters. In one of the reduced multiple regression equations, the dependent variable is the DSP. The other reduced multiple regression equation has the environmental attitude and value clusters as the dependent variables. For each of the multiple regression equations, the independent variables are the construct variables contained in the ECCB.

Measurement Issues and Limitations

According to Weitzenhoffer (1951), measurement is an operation performed on the physical world by an observer. Stevens (1946) indicated that measurement was the assignment of numerals to objects or events according to rules. Measurements are applied to the properties

of an object as opposed to the objects themselves (Torgerson, 1958; Lord & Novick, 1968). Within a psychological construct, measurement occurs when a quantitative value is placed on the behavioral sample collected using a test/scale (Crocker & Algina, 1986). When developing a scale to test an individual's attitude toward an object or idea, there exists no perfect model or science to follow. For each study that attempts to measure a psychological attitude, five potential measurement issues exist (Crocker & Algina, 1986):

- Measurements are based on limited samples,
- Measurement is subject to error,
- Measurement scales do not have well-defined units,
- No single approach to the measurement is universally accepted,
- Psychological constructs must have demonstrated relationships to other constructs not measured by the test instrument.

This information suggests that when testing a theory based on the measurement of a psychological attribute, the measurement issues need to be addressed in an effort to attain reliable and valid data. However, when testing a previously developed scale, it is important to be consistent with the measurement principles used for that particular instrument. Additionally, these measurement issues suggest that in all cases some measurement error will be observed when trying to put a mathematical value on a person(s) attitude or belief relative to some object or construct. For the purposes of this study, consistency in the use of these scales was maintained wherever possible. For example, the scale items remained consistent based on previous use in the literature. Likewise, the purpose in which the scales are used is consistent with previous studies. Additionally, Cronbach's Alpha scores for each scale were acceptable in previous studies in which the scales were used.

Potential measurement issues exist within the data collection process. This involves the possibility of a respondent completing more than one questionnaire. With the in-class delivery

method, the researcher and his assistants will need to be particularly careful not to distribute survey questionnaires to an individual more than once. If this were to happen repeatedly, then survey data could become skewed and unusable. With the data collection occurring on a small campus, the researcher will know a number of the potential respondents and thus, could possibly determine the respondent's identity. Although this may not skew the data, this could influence the researcher's opinion of the data collected.

Unlike the Kilbourne studies, the survey respondent in this study may not be majoring in business. The differing majors within a liberal arts curriculum may produce some students with a more pro-environmental stance and thus cause the DSP to have measurement issues. Thus, where Kilbourne could assume the respondents have similar educational or academic philosophies, this assumption will not exist in this study. The different majors represented will provide for different levels of environmental knowledge among the sample and thus may produce measurement error that was not experienced in previous studies.

CHAPTER 4

ANALYSIS AND RESULTS

The purpose of this chapter is to present the study results and findings. A total of 296 students were interviewed for this study. A response rate of 97.6% was achieved during data collection. A total of three people refused to complete the study. No reason was given for the refusals. Also, of the 296 students interviewed, four of the surveys were deemed unusable. Thus, 292 usable surveys were collected and prepared for analysis. Table 8 provides a brief summary of the data collection statistics.

Table 8
Data Collection Statistics

Attempted number of interviews	299
Total number of respondents	296
Number of unusable interviews	4
Total number of refusals	3
Total usable surveys	292
Response rate	97.6%

Sample Demographics

The purpose of this section is to describe the study sample respondents. Demographic information collected on each respondent includes age, gender, racial/ethnic background, class/year in school, major, full-time or part-time status as a student, income level, and work status. The sample represents both traditional and non-traditional students at Mount Olive College. The college provides educational opportunities at five other locations, working with non-traditional students only. At the Mount Olive location, the total student population is

approximately 700 traditional students and 500 to 750 non-traditional students, depending on the educational cohorts in session. At the time of the survey, approximately 700 traditional students and 500 non-traditional students were enrolled at the Mount Olive College location in Mount Olive, NC. The sample was collected using only Mount Olive College students at the Mount Olive location. With the sample being mixed with traditional and non-traditional students, work status and income level demographics are important to measure, in particular with regard to the non-traditional students in the sample. Table 9 provides a summary of the gender, age and ethnicity statistics of the sample respondents.

Table 9
Percentage of Individuals Based on Gender, Age, and Ethnicity

Demographic	Percentage of Respondents
Gender	
Male	41.6
Female	57.7
Age	
16-19	37.8
20-24	28.9
25-34	13.4
35-44	12.7
45-54	5.8
Over 55	.7
Ethnicity	
African American	23.0
Asian/Pacific Islander	1.4
Caucasian	62.9
Latino/Central/South American	5.5
Other	4.5

Gender results for the sample indicate the study population is primarily female. As expected, the sample is young with approximately 66% of the population being 24 years of age and younger. Further, 34% of the study sample being 25 years of age and older indicates the diversity of the student(s) represented at Mount Olive College. This was expected, as a large segment of the student population at Mount Olive College is adult students who attend school in the evening. These students are often returning to school to complete their degree while

working full-time. Primarily, the sample was Caucasian, with the next largest ethnic group being African American. Latinos were not represented very highly in the sample. Similarly, few Latinos are present within the college's student population. Latinos are prevalent within the county and regional population around Mount Olive College, but the student population remains largely Caucasian and African-American.

Within the sample population, 92% of the students were full-time with a variety of majors. Of the student sample, approximately 65% were freshmen or sophomores. One-third of the students were majoring in Business Management. This is representative of the college student population as a whole, as approximately 35% of the total student body is majoring in some area of Business. Further, the second largest major on campus in terms of traditional students is Recreation and Leisure Studies. Based on our sample, the second largest majors' group represented is Recreation and Leisure Studies students at 13.1% of the sample population. Approximately 11% of the sample population was undecided in their major, which was expected, based on the large number of freshmen and sophomores that were interviewed. Overall, the study population of majors was very representative of the total student body representation of majors, in particular for the traditional student population. Table 10 provides a summary of the statistics related to sample respondents' attendance and class status and their major course of study.

The work status of the sample population produced the following results. The two largest groupings within the sample statistics were those who work full-time (38.8%) and those who did not work at all (38.1%). Based on the student population that attends Mount Olive College, these results should be expected based on the diversity presented by both the traditional and non-traditional student populations. Primarily, individuals who work full-time represented the non-traditional students who were interviewed for this study. Similarly, the students who indicated that they did not work at all are likely from the traditional student population. The part-time workers would most likely be from the traditional students. Income statistics for the sample

population indicate approximately 20% of the sample either did not know their income level, or chose not to respond. With the cost of a year of education at Mount Olive College at

Table 10
Percentage of Individuals Based on Full-time/Part-time Study Mode, Class Status, and Major Course of Study

Demographic	Percentage of Respondents
Full-time/Part-time Student Status	
Full-time	92.4
Part-time	7.2
Class	
Freshman	34.0
Sophomore	29.6
Junior	20.6
Senior	13.7
Unsure	.7
Major	
Art and Visual Communication	5.8
History and Social Studies	1.4
Language and Literature	2.7
Music	.7
Religion	2.4
Science and Mathematics	6.9
Business Administration	0
Accounting	.3
Business Management	33.0
Computer Information Systems	1.7
Human Resource Management	0
Agribusiness	2.7
Criminal Justice	7.2
Early Childhood Education	6.9
Psychology	2.4
Recreation/Leisure Studies	13.1
Health Care Management	1.7
Unknown	10.7

$17,500 for tuition, room and board for traditional students at the time of the study, there are a significant number of students who attend the college who have incomes of less than $40,000 per year. Further, statistics within Mount Olive College would indicate most of the student population at the college lives primarily in the eastern portion of North Carolina. Table 11 provides a summary of sample respondents' individual work status and household income level.

Table 11
Percentage of Individuals Based on Individual Work Status and Household Income Level

Demographic	Percentage of Respondents
Work Status	
Full-Time	38.8
Part-Time	19.9
Retired	1.4
Do not work at current time	38.1
Household Income Level	
0-$9,999	8.9
$10,000-$19,999	6.2
$20,000-$29,999	11.7
$30,000-$39,999	10.3
$40,000-$49,999	5.2
$50,000-$59,999	7.9
$60,000-$69,999	5.8
$70,000-$79,999	3.8
$80,000-$89,999	7.6
$90,000-$99,999	4.5
Over $100,000	8.6
Did Not Respond	19.2

Descriptive Statistics

The descriptive results present the initial findings for each attitudinal, value and behavioral measurement instrument within the study. For each scale, the initial results include frequencies, means and initial item analysis. Further, reliability and confirmatory factor analyses are completed on each scale to determine the reliability and validity of the measurement scales used for this study. Further, only the sample respondents who completed each question within the scale were used for analysis. Thus, for each scale analysis, the total N may differ.

Table 12 provides a frequency distribution of responses for the New Ecological Paradigm (NEP) scale. The scale does not have a neutral position in the respones in an effort to require the respondents to choose whether they agree or disagree with the statement. Analysis of this table indicates that approximately 85% of the respondents agree that “humans are severly abusing the environment.” In contrast, more than 78% of the respondents agree that “the earth has plenty of resources if we just learn how to develop them.” Further review of the

Table 12

Frequency Distribution of Valid Responses, in Percentages, Including Means, Sample Size and Corrected Item-Total Correlation for each NEP Variable

NEP Statement	SA	A	D	SD	N	Mean	r_{i-t}
1. We are approaching the limit of the number of people the earth can support.	12.5	44.6	32.9	10	262	2.40	.14
2. Humans have the right to modify the natural environment to suit their needs.	5.6	34.7	35.8	24	262	2.79	.10
3. When humans interfere with nature it often produces disastrous consequences.	30.8	40.8	25.3	3.1	262	1.98	.16
4. Human ingenuity will insure that we do NOT make the earth unlivable.	5.6	42.5	41.1	10.9	262	2.57	.18
5. Humans are severely abusing the environment.	34.7	51.2	11.2	2.8	262	1.80	.15
6. The earth has plenty of natural resources if we just learn how to develop them.	30.1	48.4	15.2	6.2	262	1.98	.22
7. Plants and animals have as much right as humans to exist.	39.2	43.6	12.0	5.2	262	1.82	.20
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	7.3	38.8	43.6	10.4	262	2.59	.20
9. Despite our special abilities humans are still subject to the laws of nature.	43.3	45.3	9.7	1.7	262	1.69	.06
10. The so-called “ecological crisis” facing humankind has been greatly exaggerated.	7.4	36.6	43.0	13	262	2.64	.11
11. The earth is like a spaceship with very limited room and resources.	14.9	44.1	32.6	8.3	262	2.33	.27
12. Humans were meant to rule over the rest of nature.	23.3	32.6	30.2	13.9	262	2.37	-.02
13. The balance of nature is very delicate and easily upset.	28.7	50.5	18	2.8	262	1.92	.23
14. Humans will eventually learn enough about how nature works to be able to control it.	4.9	37.4	36.4	21.3	262	2.73	.20
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	21	46.2	29	3.8	262	2.14	.21

SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

descriptive results indicate lower mean scores, resulting in agreement, for statements in which a positive statement about the environment is made. Similarly, the results also indicate higher

mean scores, indicating less agreement for statements in which a negative statement about the environment is made. For these statements, greater disagreement with the statement equals a more positive view of the environment. Yet, more than 55% of this sample believe that “humans were meant to rule over the rest of nature.” For the individual item and scale analysis, the scores for the items that are worded negatively toward the environment were re-coded to provide a consistent scoring pattern within analysis procedures and reporting.

The results presented in table 13 provide an examination of the items used to measure the Dominant Social Paradigm. Analysis of the frequency distribuition(s) of these items indicates support for the constructs present within DSP. For example, 90% of the individuals in this study indicate that “advancing technology provides us hope for the future.” Further, 65% of the respondents concur that “future resource shortages will be solved by technology.” Yet, more than 70% of the sample agree that “advancing technology is out of control.” This initial analysis provides support for the political and economic constructs in the DSP.

For example, approximately 78% of the respondents correspond that “business interests have more political power than individuals.” Further, 56% of the study population agree that “major changes in election procedures” are needed to ensure political equality. Also, individuals felt strongly (85% agreed) that “ the average person should have more input in dealing with social problems.”

Economically, respondents to this study concur that “individual behavior should be determined by economic self-interest, not politics.” However, the results also indicate that “we focus too much on economic measures of well-being.” Overall, consistent support for each of the constructs in the DSP appears to be present in this study.

Overall analysis of the results for the Specific Environmental Problem (SEP) items (Table 14) indicates support or agreement in a pro-environmental stance for each of the environmental issues. For each item, strong support from a pro-environmental stance is provided within this study. More than 60% of the study sample responded in a pro-

environmental stance to each item. For many of the items, more than 70% of the respondents provided pro-environmental support for the issue(s) in each item. The lone exception would be that more than 56% of the study sample agreed that "world population levels are well within what the earth can support." This could be a reflection of individual knowledge on the current population level and not futuristic population levels. Regardless, the respondents in this sample concur that environmental problems, such as those listed in table 14, will occur in the near future.

Table 13
Frequency Distribution of Valid Responses, in Percentages, Including Means, Sample Size and Corrected Item-Total Correlation for each DSP Variable

DSP Statement	SA	A	D	SD	N	Mean	r_{i-t}
Technology							
1. Advancing technology provides us with hope for the future.	42.6	48.1	7.9	1.4	273	1.68	-.01
2. The bad effects of technology outweigh its advantages.	7.3	34.0	49.0	9.7	273	2.61	.21
3. Future resource shortages will be solved by technology.	9.7	55.2	27.6	7.6	273	2.33	.17
4. Advancing technology is out of control.	10.4	19.4	50.2	20.1	273	2.81	.09
Political							
5. The average person should have more input in dealing with social problems.	23.7	62.2	12.0	2.1	273	1.92	.12
6. Business interests have more political power than individuals.	30.2	48.5	18.9	2.4	273	1.93	.13
7. Political equality can be attained only by major changes in election procedures.	12.2	44.6	37.3	5.9	273	2.37	.16
8. Political questions are best dealt with through free market economics.	4.9	55.4	36.1	3.5	273	2.39	.23
Economic							
9. We focus too much on economic measures of well-being.	15.2	46.4	31.1	7.3	273	2.28	.01
10. Individual behavior should be determined by economic self-interest, not politics.	14.9	62.2	19.8	3.1	273	2.10	.27
11. The best measure of progress is economic.	8.7	46.5	38.5	6.3	273	2.44	.20
12. If the economy continues to grow, everyone benefits.	11.4	37.0	39.8	11.8	273	2.53	.20

SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

To measure individual values, each respondent was asked to respond to the Norm Activation Model (NAM) value statements listed in table 15 using the following as a guide, which

is consistent with previous use: “Please tell me how important each of these is as a guiding principle in YOUR life….”

Table 14
Frequency Distribution of Valid Responses, in Percentages, Including Means, Sample Size and Corrected Item-Total Correlation for each Specific Environmental Problems

Specific Environmental Problem Statement	SA	A	D	SD	N	Mean	r_{i-t}
Environmental Problems							
1. Global warming is not really a problem.	4.5	17.5	33.7	44.3	274	3.17	-.09
2. The problems relating to ozone depletion are overstated.	3.1	22.4	47.6	26.9	274	2.98	-.02
3. Our present rate of consumption can be maintained with no ecological problems.	2.1	19.8	52.8	25.3	274	3.01	.15
4. Since the volume of water on the earth doesn’t change, shortages cannot occur.	6.6	15.5	49.0	29.0	274	3.00	-.02
5. World population levels are well within what the world can support.	8.7	48.1	37.7	5.5	274	2.39	.04
Shortages							
6. Agricultural productivity will decline in the near future.	13.2	45.8	31.9	9.0	274	2.36	.22
7. Food shortages are possible in the near future, even in developed countries.	16.2	47.8	30.2	5.8	274	2.24	.30
8. Serious shortages of some natural resources will occur in the near future.	23.2	56.7	17.3	2.8	274	2.01	.33
9. Continued use of chemicals in agriculture will damage the environment beyond repair.	25.9	48.3	21.4	4.5	274	2.07	.27
Extinctions							
10. Some living things are unnecessarily threatened with extinction.	29.6	48.4	17.4	4.5	274	1.98	.10
11. Destruction of rainforests will have long-term environmental consequences.	47.4	42.6	8.3	1.7	274	1.65	.25
12. Many types of pollution are rising to dangerous levels.	37.0	50.9	9.0	3.1	274	1.78	.30
Nuclear							
13. Nuclear power is the solution to energy shortages.	6.3	33.1	45.8	14.8	274	2.69	.03
14. Nuclear accidents causing long-term damage are likely in the future.	26.7	51.7	19.1	2.4	274	1.97	.31

SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree

In reviewing the descriptive results for each of the values presented, the conservation values were most important to the majority of respondents in this study. Conservation values are

generally considered to be the traditional family values within our society. For example, 70% of the respondents, indicated that “family security and safety for loved ones” was extremely important as a guiding principle in life. This along with “honoring parents, and showing respect for loved ones” recorded the highest mean scores for any value listed in the Norm Activation Model.

Table 15
Frequency Distribution of Valid Responses, in Percentages, Including Means, Sample Size and Corrected Item-Total Correlation for the Norm Activation Model

Norm Activation Model Statement	NI	SI	MI	VI	EI	N	Mean	r_{i-t}
Biospheric/Altruistic Values								
1. Protecting the environment, preserving nature.	2.4	12.1	20.3	23.1	42.1	287	3.91	.54
2. A world at peace, free of war and conflict.	3.1	14.1	15.5	25.2	42.1	287	3.89	.59
3. Social justice, correcting injustice, care for the weak.	2.8	10.8	14.6	30.9	41.0	287	3.96	.58
Conservation Values								
4. Honoring parents and elders, showing respect.	.7	10.7	8.3	21.4	59.0	287	4.28	.67
5. Family security, safety for loved ones.	1.0	8.7	4.5	15.9	69.9	287	4.47	.71
6. Self-discipline, self-restraint, resistance to temptation.	2.4	11.0	15.8	33.0	37.8	287	3.94	.69
Egoistic Values								
7. Authority, the right to lead or command.	7.6	12.4	40.2	25.1	14.8	287	3.28	.51
8. Influential, having an impact on people and events.	3.8	13.7	30.9	34.0	17.5	287	3.49	.58
9. Wealth, material possessions, money.	13.7	18.6	43.0	15.1	9.6	287	2.89	.26
Openness to Change Values								
10. A varied life, filled with challenge, novelty, and change.	3.1	13.1	37.1	33.7	13.1	287	3.39	.52
11. An exciting life, stimulating experiences.	3.8	14.1	23.0	34.7	24.4	287	3.63	.58
12. Curious, interested in everything, exploring.	3.8	12.0	34.4	29.9	19.9	287	3.51	.48

NI=Not Important; SI=Slightly Important; MI=Moderately Important; VI=Very Important; EI=Extremely Important

The biospheric/altruistic values were also very important to individuals in this sample. Although not as vital as the traditional family values, respondents denote the social and physical environment around them is very important as a guiding principle in life. For example, at least 65% of the survey respondents indicated that each of the values listed in this value measurement was very or extremely important as a guiding principle in life.

In the openness to change value orientation, reflecting on individual motivation to follow their emotional and intellectual interests, respondents rated these values as moderately to very important as a guiding principle in their life. The value statement in this orientation with the highest mean value, suggesting this value is most important, was that individuals are seeking "an exciting life, stimulating experiences." This is consistent with the theme of this value orientation as presented in previous research. The theme of this orientation suggests that individuals are willing and open to changing their behavior.

The egoistic value orientation reflects values affecting the individual or person who is responding. Not surprisingly, the values in this orientation received the least important mean scores, suggesting values that affect only the individual are not as important as a guiding principle in their life, such as support for their families, social environment and intellectual stimulation. In this value orientation, the value "wealth, material possessions and money" was listed as only somewhat to moderately important as a guiding principle for respondents. More important, based on the descriptive statistics, was the value item "influence that each may have on people or events."

To summarize, descriptive results for the measures of environmental attitudes and values within this study support a pro-environmental stance by the respondents. This is consistent with previous studies of college students as noted by Kilbourne et al. (2001,2002). However, the descriptive results also suggest respondent support for the DSP constructs regarding politics, technology and economics, with strong support for technology and economics. For example, 90% of the respondents agree that "advancing technology provides us

Table 16

Frequency Distribution of Valid Responses, in Percentages, Including Means, Sample Size and Corrected Item-Total Correlation for the Ecologically Conscious Consumer Behavior Model

Ecologically Conscious Consumer Behavior Model Statement	**SA**	**A**	**D**	**SD**	**N**	**Mean**	**r_{i-t}**
1. I buy toilet paper made from recycled paper.	10.4	38.2	29.9	21.5	271	2.62	.52
2. I buy Kleenex made from recycled paper.	9.4	42.0	30.9	17.7	271	2.57	.57
3. I buy paper towels made from recycled paper.	10.1	41.7	30.9	17.4	271	2.55	.58
4. To save energy, I drive my car as little as possible.	14.8	22.7	37.1	25.4	271	2.76	.51
5. To reduce our reliance on foreign oil, I drive my car as little as possible.	9.3	23.4	40.9	26.5	271	2.87	.47
6. I make every effort to by paper products made from recycled products.	9.3	36.3	34.3	20.1	271	2.67	.71
7. I use a low phosphate detergent (or soap) for my laundry.	8.3	24.3	42.4	25.0	271	2.85	.64
8. I have convinced members of my family or friends not to buy some products which are harmful to the environment.	7.3	25.5	40.6	26.6	271	2.87	.64
9. Whenever possible, I buy products packaged in reusable containers.	15.8	39.2	30.6	14.4	271	2.46	.61
10. I try only to buy products that can be recycled.	8.0	33.9	39.1	19.0	271	2.71	.71
11. I normally make a conscious effort to limit my use of products that are made of or use scarce resources.	8.7	32.4	41.1	17.8	271	2.68	.70
12. I will not buy products which have excessive packaging.	5.2	23.4	48.6	22.8	271	2.92	.62
13. When there is a choice, I always choose that product which contributes the least amount of pollution.	12.5	31.7	40.8	15.0	271	2.60	.68
14. If I understand the potential damage to the environment that some products can cause, I do not purchase those products.	18.6	38.3	33.8	9.3	271	2.35	.64
15. I have switched products for ecological reasons.	6.6	30.6	43.4	19.4	271	2.76	.80
16. I have purchased products because they cause less pollution.	8.7	33.6	39.8	18.0	271	2.70	.78
17. I do not buy products in aerosol containers.	11.4	20.3	44.1	24.1	271	2.83	.57
18. When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.	7.6	31.5	42.9	18.0	271	2.73	.75
19. When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.	17.2	39.7	34.1	9.0	271	2.34	.67

20. I will not buy a product if the company which sells it is socially irresponsible.	12.1	41.0	36.6	10.3	271	2.48	.56
21. I usually purchase the lowest-priced product, regardless of its impact on society.	21.5	38.4	30.8	9.3	271	2.27	.14
22. I do not buy household products that harm the environment.	7.0	40.4	40.0	12.6	271	2.60	.62
23. I try to buy energy-efficient household appliances.	19.6	50.0	21.3	9.1	271	2.21	.56
24. I always try to use electric appliances (e.g. dishwasher, washer, and dryer) before 10am and after 10pm.	11.2	32.5	36.7	19.6	271	2.66	.56
25. I have tried very hard to reduce the amount of electricity that I use.	28.4	43.6	17.6	10.4	271	2.13	.53
26. I buy high-efficiency light bulbs to save energy.	25.7	38.2	24.7	11.5	271	2.23	.61
27. I have purchased a household appliance because it uses less electricity than other brands.	21.1	33.6	31.8	13.5	271	2.38	.64
28. I have purchased light bulbs that were more expensive but saved money.	19.2	34.3	33.9	12.6	271	2.40	.60
29. I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity that I use.	18.8	42.5	26.1	12.5	271	2.33	.67

with hope for the future." Likewise, 77% of the study sample concur that "individual behavior should be determined by economic self-interest" and 60% of respondents correspond with "political questions are best dealt with through free market economics." To this point, the results have focused on attitudes and values toward the envrionment. The results presented in table 16 focus on actual behavior.

Previous attitude/behavior research provides some support that behavior should indeed reflect attitude(s) toward a particular object, construct, etc. A brief overview of the behavioral descriptive results indicates a pro-DSP behavioral pattern. For example, approximately 60% of respondents revealed that "they usually purchase the lowest priced products regardless of it's impact on society." Similarly, approximately 61% of respondents disagreed with the statement "when I purchase products, I always make a conscious effort to buy those products that are low in pollutants" suggesting a pro-DSP choice.

The descriptive results from the ECCB scale further suggest a pro-DSP choice when examining items in which economic decisions are mentioned in the statement. In some instances, these economic choices may also be choices which are pro-environmental. For example, 70% of respondents agreed with the following statement: “I try to buy energy-efficient household appliances.” Likewise, approximately 70% agreed with the statement “I have tried very hard to reduce the amount of electricity that I use.” Similarly, 65% of individuals agreed with the statement “I buy high-efficiency light bulbs to save energy.” In fact, for each item that placed concern on energy efficiency or savings, individuals responded favorably to cost savings. In these cases, pro-DSP behavior is also pro-environmental behavior.

Yet, where convenience is concerned, in particular with transportation, respondents were less concerned with conservation and more concerned with convenience, or the ability to travel. For example, more than 60% disagreed with the following statement “To save energy, I drive my car as little as possible.” Furthermore, more than 75% disagreed on the following: “To reduce our reliance on foreign oil, I drive my car as little as possible.” These results would indicate that individuals are unwilling or unable to give up the use of their automobile. Is this because they must have transportation to meet the demands of everyday life, or because they do not want the inconvenience of finding alternate, more efficient methods of transportation?

The descriptive results imply if people were given a choice in environmental products to purchase, individuals would make an environmentally responsible choice. For example, 56% of individuals agreed with this statement: “When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.” The key word in this statement is equal. What is meant by equal, same price, same quality, same result, etc.? This term has been left to individual perception, but it is likely price, quality and performance each have a role in determining what is equal. Additionally, individuals may behave more environmentally responsibly if they were more knowledgeable about the potential hazards that products may cause. Approximately 57% of individuals concurred with “If I

understand the potential damage to the environment that some products can cause, I do not purchase those products." Is more education needed regarding the potential environmental hazards of some products?

A brief review of the items in this scale that focus on recycling, indicates 51% of individuals buy Kleenex and paper towels made from recycled paper. Also, 45% of these individuals agreed with the statement " I make every effort to buy paper products made from recycled products." Further evidence to support the use of recycled products may be found in the following statement in which 54% agreed: "Whenever possible, I buy products packaged in reusable containers." However, only 41% supported the statement "I try only to buy products that can be recycled." Examining the results of these two statements suggest that if more products were available in environmentally friendly containers, the purchase of these containers would likely take place. Descriptively, the results support the information presented in the literature review, behaving in an environmentally supportive manner requires uncompromised convenience (J. Schwartz & Miller, 1991; Ewing & Sarigollu, 1999).

Individual Scale Analyses

In this study, three defined and well-tested scales were used to collect information on individual attitudes, values and behaviors toward the environment. Also, two scales that are relatively untested were used to collect information regarding attitudes toward specific environmental attitudes, and also attitudes that measure the DSP constructs. Individual scale reliability results for each of these scales is presented in table 17.

To calculate the scale reliabilities, the negative items were re-coded within each scale to provide for accurate calculations of Cronbach's Alpha coefficient. A review of the results presented in table 16 confirms that each scale has an acceptable reliability coefficient with the exception of the DSP. In particular, the r-values for the Norm Activation Model and the Ecologically Conscious Consumer Behavior Scale would be considered excellent in measurement terms. The high value for the ECCB scale could be inflated some because of the

increased number of items. However, the 12-item Norm Activation Model has an excellent Cronbach's Alpha score, indicating good internal consistency within the scale.

Table 17
Individual Scale Statistics, including Cronbach's Alpha, Scale Mean, Scale Variance

Scale	Cronbach's Alpha	Scale Mean	Scale Variance	Number of Items	N
New Ecological Paradigm	.713	33.43	29.68	15	262
Dominant Social Paradigm items	.418*	29.29	10.91	12	273
Specific Environmental Problem items	.774	28.83	30.426	14	274
Norm Activation Model	.869	44.64	69.057	12	287
Ecologically Conscious Consumer Behavior Scale	.948	74.55	275.507	29	271

* Not an acceptable r-value for scale internal reliability.

The NEP scale produced the lowest acceptable r-value at 0.713. The r-value for the NEP may have been effected by the survey layout. Within the survey, items from the DSP, NEP and the SEP were divided and placed into one section of the survey, so that a respondent may have answered an NEP item, then a DSP item, then a SEP item, etc., throughout this section. Statements from the Norm Activation Model and the ECCB scale were placed in separate sections, due to the different scoring pattern for the NAM items, and to keep the behavior items independent from the attitudinal items for measurement purposes. Thus, the NAM and the ECCB scale items were answered in consective order in distinct sections of the survey instrument. Although no concrete evidence exists, a negative effect on the r-values for the NEP, DSP and the SEP scales may exist as a result of the survey layout.

New Environmental Paradigm Scale Analysis

The analysis of the NEP produced a Cronbach's Alpha score of 0.713. This value was calculated after recoding the negative items (seven of the fifteen items were worded in a negative manner) to reflect a consistent scoring pattern for all statements. Table 18 provides item total statistics for the NEP scale. Examination of the corrected item-total correlations suggest the item "The earth has plenty of natural resources if we just learn how to develop

them" is a slight anomaly from the remainder of the items. The Cronbach's Alpha coefficient, if the item was deleted from the scale for this item, indicates that the overall alpha score would be higher for the NEP scale if this item was deleted. Similar items, statements focusing on DSP or

Table 18
NEP Item Analysis, Means Scores, Corrected Item-Total Correlation and Alpha Score if the Item were Deleted from the Scale

NEP Item	Mean Scores	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
1. We are approaching the limit of the number of people the earth can support.	2.40	.263	.705
2. Humans have the right to modify the natural environment to suit their needs.	2.21	.440	.684
3. When humans interfere with nature it often produces disastrous consequences.	1.98	.255	.706
4. Human ingenuity will insure that we do NOT make the earth unlivable.	2.43	.220	.709
5. Humans are severely abusing the environment.	1.80	.379	.693
6. The earth has plenty of natural resources if we just learn how to develop them.	3.02	.100	.724
7. Plants and animals have as much right as humans to exist.	1.82	.284	.703
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	2.41	.457	.683
9. Despite our special abilities humans are still subject to the laws of nature.	1.69	.304	.700
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	2.36	.444	.684
11. The earth is like a spaceship with very limited room and resources.	2.33	.322	.698
12. Humans were meant to rule over the rest of nature.	2.63	.281	.705
13. The balance of nature is very delicate and easily upset.	1.92	.356	.695
14. Humans will eventually learn enough about how nature works to be able to control it.	2.27	.229	.709
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	2.14	.465	.682
Scale Totals	33.43		
Item Grand Mean	2.23		

human domination over nature within this scale, behaved more in accordance with theoretical expectations.

Factor analysis of this scale was performed using identical procedures to Dunlap et al. (2000). In their study, factor analysis was performed using a principal components analysis with a varimax rotation. Further, consistent with the original NEP scale (Dunlap & Van Liere, 1981), a four-factor solution was predicted. Results in the study conducted by Dunlap et al. (2000) in which a four-factor solution, based on the original version of the scale, was used, indicates loadings consistent with a one-factor solution. Although a four-factor solution could be determined, many items loaded heavily onto one factor, creating the belief of the authors that a one-factor solution may be correct. The suspiscion that a one-factor solution is the correct fit, along with the high internal consistency within their study suggested to Dunlap et al., that the revised NEP was a measure of a coherent belief system or worldview (Dunlap et al., 2000).

Consistent with the Dunlap et al. studies, a four-factor solution was analyzed. Table 19 shows the factor loadings for each item of the rotated component matrix for the four-factor solution. Review of the four-factor rotated component matrix suggests some issues exist with a four-factor solution being appropriate for this analysis. The analysis presents evidence that at least two factors are present, with strong loadings on the first two factors and multiple items loading within these factors. The evidence supporting factor three and four is not as convincing. For example, factor three is supported by two items, NEP6 and NEP9, with NEP9 loading negatively within the factor. This suggests a negative relationship within the factor and with item NEP6. The loadings for each of these items in factor three is strong. Further, NEP12 presents a strong loading for factor four. However, this is the only item within this factor. Although, one item may represent a factor, constructs are usually defined and measured using more than one item within an analysis. A construct or concept within a measurement structure is generally measured by more than one item, simply because it takes more than one item to adequately measure a concept or construct.

Table 19

Confirmatory Factor Analysis for the NEP, Four-Factor Rotated Solution

NEP Item	Construct	Factor 1	Factor 2	Factor 3	Factor 4
11. The earth is like a spaceship with very limited room and resources.	Limits	**.706**	-.142	.201	.024
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	Eco-Crisis	**.684**	.144	-.002	.028
13. The balance of nature is very delicate and easily upset.	Balance	**.600**	.109	-.078	.031
1. We are approaching the limit of the number of people the earth can support.	Limits	**.543**	-.025	.096	.085
3. When humans interfere with nature it often produces disastrous consequences.	Balance	**.520**	.161	-.176	-.258
7. Plants and animals have as much right as humans to exist.	Anti-Anthro	**.500**	.047	**-.307**	.231
5. Humans are severely abusing the environment.	Eco-Crisis	**.497**	.175	-.175	.125
2. Humans have the right to modify the natural environment to suit their needs.	Anti-Anthro	.209	**.723**	.007	-.046
14. Humans will eventually learn enough about how nature works to be able to control it.	Anti-Exempt	-.125	**.673**	-.109	-.073
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	Balance	.145	**.664**	.128	.165
10. The so-called “ecological crisis” facing humankind has been greatly exaggerated.	Eco-Crisis	.258	**.573**	.199	.141
4. Human ingenuity will insure that we do NOT make the earth unlivable.	Anti-Exempt	-.038	**.531**	-.050	.066
6. The earth has plenty of natural resources if we just learn how to develop them.	Limits	.073	.296	**.831**	-.004
9. Despite our special abilities humans are still subject to the laws of nature.	Anti-exempt	.258	**.376**	**-.517**	-.008
12. Humans were meant to rule over the rest of nature.	Anti-Anthro	.150	.164	-.028	**.941**
Eigenvalues		2.633	2.395	1.240	1.090
Percent of Variance		17.555	15.965	8.270	7.269

*loadings above 0.30 are highlighted

** loadings which are relatively high, could be considered as part of factor two, if analyzed as a two-factor solution.

A five-factor analysis was also completed for the NEP data. The five-factor solution (table 20) was extracted because in theory, five meaurement constructs were developed during the re-construction of the measurement instrument (Dunlap et al., 2000). Analysis of the five-factor extraction indicates multiple high loadings across several items within the scale. A multiple loading was assumed to occur when the factor loading value is 0.300 or greater. The factor loading provides the direct effect of the factor on the observed variables (Bollen, 1989). Therefore, although the factor loading requirement is arbitrary, it is generally accepted that a loading of .300 or greater represents a significant loading on a factor in social science research (Bollen, 1985). The following items produced multiple loadings, or a high value for more than one factor; “If things continue on their present course, we will soon experience a major ecological catastrophe”, “Humans have the right to modify the natural environment to suit their needs”, “The earth is like a spaceship with very limited room and resources”, and “Despite our special abilities humans are still subject to the laws of nature.” Among these items, NEP9, “Despite our special abilities humans are still subject to the laws of nature”, loaded at greater than 0.35 on three factors within the five-factor solution. However, neither of the loadings would be considered high, with the highest factor loading occurring on factor 4 at 0.446. Theoretically, a five-factor solution should be present with a proposed five constructs being measured. However, even the originators of the measurement instrument suggest the scale is less than five factors (Dunlap et al., 2000). The originators of the revised scale believe the measurement instrument actually measures only one factor, representing a new worldview that is environmentally friendly (Dunlap et al., 2000). Thus, for this examination, a one-factor solution is also presented.

The one-factor solution (table 21) exhibits significant loadings for 14 of the 15 items in the scale. The item not loading significantly, greater than 0.3, is: “The earth has plenty of natural resources if we just learn how to develop them.” This item represents human

Table 20

Confirmatory Factor Analysis for the NEP, a Five-Factor Rotated Solution

NEP Item	Construct	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
7. Plants and animals have as much right as humans to exist.	Anti-Anthro	**.694**	-.070	-.084	-.093	.246
13. The balance of nature is very delicate and easily upset.	Balance	**.606**	.038	.191	.052	.035
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	Eco-Crisis	**.568**	.114	**.386**	.070	.023
3. When humans interfere with nature it often produces disastrous consequences.	Balance	**.560**	.102	.134	-.054	-.255
5. Humans are severely abusing the environment.	Eco-Crisis	**.547**	.118	.116	-.048	.128
14. Humans will eventually learn enough about how nature works to be able to control it.	Anti-Exempt	-145	**.753**	.056	-.159	-.090
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	Balance	.127	**.663**	.095	.172	.154
2. Humans have the right to modify the natural environment to suit their needs.	Anti-Anthro	**.429**	**.611**	-.216	.218	-.042
4. Human ingenuity will insure that we do NOT make the earth unlivable.	Anti-Exempt	-.001	**.553**	-.022	-.032	.058
10. The so-called “ecological crisis” facing humankind has been greatly exaggerated.	Eco-Crisis	.230	**.544**	.125	.270	.132
1. We are approaching the limit of the number of people the earth can support.	Limits	.090	.118	**.817**	-.092	.059
11. The earth is like a spaceship with very limited room and resources.	Limits	**.369**	-.109	**.666**	.144	.011
6. The earth has plenty of natural resources if we just learn how to develop them.	Limits	-.008	.195	.022	**.897**	-.006
9. Despite our special abilities humans are still subject to the laws of nature.	Anti-exempt	**.363**	**.393**	.034	**-.446**	-.010
12. Humans were meant to rule over the rest of nature.	Anti-Anthro	.137	.170	.087	.004	**.939**
Eigenvalues		2.352	2.272	1.419	1.231	1.083
Percent of Variance		15.680	15.147	9.458	8.209	7.223

*loadings above 0.30 are highlighted

** loadings which are relatively high, could be considered as part of factor two, if analyzed as a two-factor solution.

control and limits to the environment. This item would suggest a preference to DSP beliefs. Two items with just over a 0.3 loading in the one-factor solution also represent human control and limits to the environment.

Table 21
Confirmatory Factor Analysis for the NEP, a One-Factor Rotated Solution

NEP Item	Construct	Factor Loading
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	Eco-Crisis	**.596**
2. Humans have the right to modify the natural environment to suit their needs.	Anti-Anthro	**.593**
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	Eco-Crisis	**.582**
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	Balance	**.565**
13. The balance of nature is very delicate and easily upset.	Balance	**.515**
5. Humans are severely abusing the environment.	Eco-Crisis	**.510**
12. Humans were meant to rule over the rest of nature.	Anti-Anthro	**.473**
7. Plants and animals have as much right as humans to exist.	Anti-Anthro	**.463**
9. Despite our special abilities humans are still subject to the laws of nature.	Anti-exempt	**.433**
11. The earth is like a spaceship with very limited room and resources.	Limits	**.427**
3. When humans interfere with nature it often produces disastrous consequences.	Balance	**.412**
1. We are approaching the limit of the number of people the earth can support.	Limits	**.401**
4. Human ingenuity will insure that we do NOT make the earth unlivable.	Anti-Exempt	**.325**
14. Humans will eventually learn enough about how nature works to be able to control it.	Anti-Exempt	**.313**
6. The earth has plenty of natural resources if we just learn how to develop them.	Limits	.220

*loadings above 0.30 are highlighted

Potentially, the item loading below a 0.3 is simply a result of the statistical analysis. Within factor analysis, loadings gradually decrease within a particular factor. For this analysis, the highest loading of the 15 items was 0.596. Thus, a one-factor solution for the NEP would be an adequate solution for the results of this analysis. With 14 of the 15 items loading with some significance, the NEP would represent a one-factor solution, and support the idea of a worldview

as suggest by Dunlap et al. However, examination of the scree plot (figure 2) indicates a one-factor solution does not explain enough variance within the model.

Examination of the initial eigenvalues and the total variance explained for each of the factor analysis models concerning the NEP (table 22), suggests that a two-factor solution is best for the NEP scale in this study. Using the Kaiser method for determining the proper number of factors to extract in a factor analysis procedure, two factors would be extracted, as two factors extracted have eigenvalues of greater than 1.0. Basically, in the principal components extraction method, if a factor does not extract at least what is expected from an original variable, all other factors are dropped. Further evidence in the scree plot (see figure 2) confirms that a two-factor solution is best for the results of the NEP in this study.

Based on the Kaiser eigenvalue analysis and examination of the scree plot, a two-factor solution is expected for the NEP in this study. Table 23 provides the factor loadings for the two-factor solution of the NEP. Examination of this solution indicates two distinct factors, in terms of the factor loadings. Further, the factor loadings are relatively high for each variable on each factor with the exception of NEP12 and NEP9 on factor one. The loading for these variables is below 0.400, and thus some concern would exist regarding these loadings. However, based on the previous factor solutions presented, and the absence of cross-loadings, this solution best represents the data for the NEP in this study. This data does not support the notion of a single worldview, like a one-factor solution presented in this scale, as defined by Dunlap et al. (2000). However, the two-factor solution supports the notion that a four- or five-factor solution is not appropriate, as suspected by Dunlap et al. Further review of the items in the second factor for this solution would suggest support for the DSP. The two factors in this solution would represent the principles of both worldviews, the NEP in factor 1 and the DSP in factor 2.

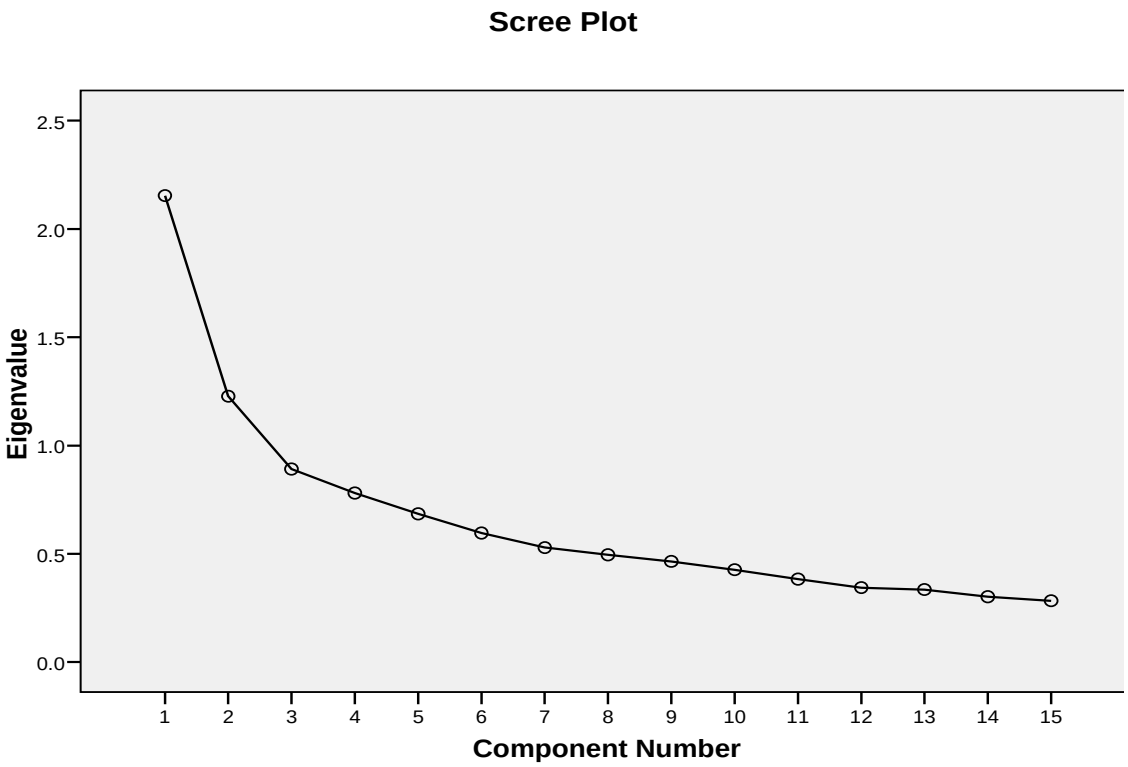

Figure 2: Scree Plot for NEP Factor Analysis

Table 22

Total Variance Explained for NEP, Five Factors

	Component	Initial Eigenvalues(a)			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Raw	1	2.154	21.763	21.763	2.154	21.763	21.763
	2	1.228	12.404	34.168	1.228	12.404	34.168
	3	.891	9.006	43.174	.891	9.006	43.174
	4	.781	7.887	51.060	.781	7.887	51.060
	5	.685	6.917	57.977	.685	6.917	57.977
	6	.596	6.022	64.000			
	7	.529	5.342	69.342			
	8	.495	5.005	74.347			
	9	.465	4.698	79.045			
	10	.427	4.310	83.355			
	11	.383	3.870	87.225			
	12	.344	3.477	90.702			
	13	.335	3.385	94.087			
	14	.302	3.051	97.138			
	15	.283	2.862	100.000			
Rescaled	1	2.154	21.763	21.763	3.281	21.876	21.876
	2	1.228	12.404	34.168	1.858	12.386	34.262
	3	.891	9.006	43.174	1.015	6.764	41.026
	4	.781	7.887	51.060	1.205	8.033	49.059
	5	.685	6.917	57.977	.999	6.659	55.718
	6	.596	6.022	64.000			
	7	.529	5.342	69.342			
	8	.495	5.005	74.347			
	9	.465	4.698	79.045			
	10	.427	4.310	83.355			
	11	.383	3.870	87.225			
	12	.344	3.477	90.702			
	13	.335	3.385	94.087			
	14	.302	3.051	97.138			
	15	.283	2.862	100.000			

Extraction Method: Principal Component Analysis.

A: When analyzing a covariance matrix, the initial eigenvalues are the same across the raw and rescaled solution.

Table 23
Confirmatory Factor Analysis, Two-Factor Solution

NEP Statement	Raw		Rescaled*	
	Component			
	1	2	1	2
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	.526	.094	**.668**	.119
11. The earth is like a spaceship with very limited room and resources.	.537	-.106	**.649**	-.128
13. The balance of nature is very delicate and easily upset.	.453	.058	**.599**	.076
7. Plants and animals have as much right as humans to exist.	.484	.011	**.582**	.014
5. Humans are severely abusing the environment.	.392	.105	**.538**	.144
1. We are approaching the limit of the number of people the earth can support.	.436	-.013	**.526**	-.015
3. When humans interfere with nature it often produces disastrous consequences.	.390	.057	**.473**	.069
12. Humans were meant to rule over the rest of nature.	.361	.292	**.367**	.297
9. Despite our special abilities humans are still subject to the laws of nature.	.240	.194	**.337**	.272
2. Humans have the right to modify the natural environment to suit their needs.	.180	.600	.208	**.690**
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	.134	.531	.174	**.687**
14. Humans will eventually learn enough about how nature works to be able to control it.	-.086	.530	-.103	**.631**
10. The so-called “ecological crisis” facing humankind has been greatly exaggerated.	.209	.479	.263	**.603**
4. Human ingenuity will insure that we do NOT make the earth unlivable.	.000	.392	.000	**.521**
6. The earth has plenty of natural resources if we just learn how to develop them.	-.044	.350	-.053	**.419**

*Rescaled numbers have been used to determine loadings within this solution.

Norm Activation Model Scale Analysis

In this study, a variation of the Norm Activation Model was used. The initial scale consists of 52 items. However, based on the work of Dietz, Stern and Guagnano (1998), the scale has been found to be efficient and useful as a measurement tool at either 12 or 15 items. In this study, the 12-item version was used. As previously reported, Cronbach’s Alpha for the NAM in this study is 0.869. In the survey, the respondents were asked to respond to each value statement using the preceding conceptual statement: “Please tell me how important each of these is as a guiding principle in YOUR life …”

Table 24

Norm Activation Model Item Analysis, Means Scores, Corrected Item-Total Correlation and Alpha Score if the Item were Deleted from the Scale

Norm Activation Model Statement	Mean Scores	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
1. Protecting the environment, preserving nature.	3.91	.540	.860
2. A world at peace, free of war and conflict.	3.89	.590	.857
3. Social justice, correcting injustice, care for the weak.	3.96	.577	.858
4. Honoring parents and elders, showing respect.	4.28	.666	.852
5. Family security, safety for loved ones.	4.47	.708	.851
6. Self-discipline, self-restraint, resistance to temptation.	3.94	.690	.850
7. Authority, the right to lead or command.	3.28	.511	.862
8. Influential, having an impact on people and events.	3.49	.584	.857
9. Wealth, material possessions, money.	2.89	.258	.878
10. A varied life, filled with challenge, novelty, and change.	3.39	.517	.862
11. An exciting life, stimulating experiences.	3.63	.581	.858
12. Curious, interested in everything, exploring.	3.51	.477	.864
Grand Mean	3.72		

Examination of the corrected item-total correlations for each of the items in the scale in Table 24 further confirms the high internal reliability in the scale. However, item 9, "Wealth, material possessions, money" is the only item with a low item-total correlation. Further, this item, if deleted, would provide a higher internal reliability for the scale.

Further confirmation of the internal reliability and consistency within the scale is presented with the individual construct reliability scores. In Table 25, Cronbach alpha scores are presented for the individual constructs represented in the scale. Theoretically, these constructs would be expected in any measurement use of this scale, based on numerous uses of this NAM in previous research. These scores were measured based on theoretical determinants of factors. Consistent internal consistency numbers within these constructs would provide another measurement confirmation of good reliability in the measurement of these items.

Table 25
Individual Reliability Scores for the Constructs Within the Norm Activation Model

Norm Activation Model Construct	Cronbach's Alpha Score
Biospheric/Altruistic Values	.785
Conservation Values	.872
Egoistic Values	.658
Openness to Change Value	.770

Analysis of the individual reliabilities further illustrates the internal consistency within this scale. Each of the construct reliability scores is good. The construct measuring the egoistic values presents the lowest alpha score at 0.658, but even this could be considered acceptable with such a small number of variables. Additionally, item nine "Wealth, material possessions, money", included in the measurement of the egoistic values, presents the lowest corrected item-total correlation score in the item analysis. Also, if this item were deleted from the scale, the reliability score would actually increase for the whole scale. Thus, this item is likely the root cause of the lower construct reliability.

In the confirmatory factory analysis, four distinct constructs are, in theory, represented in this study. They are biospheric/altruistic values, conservation values, egoistic values and openness to change values. To analyze this scale, a confirmatory factor analysis was completed. In this factor analysis, principal axis analysis with varimax rotation was used. The primary difference in using principal axis analysis versus principal components analysis is the initial value used in the diagonal of the matrix analyzed. Principal components assumes a 1.0 in the diagonal in the matrix analyzed, whereas principal axis uses a figure less than 1.0, a figure representing the reliability of the variable, determined through an iterative process. If the internal consistency values are high for a scale and the number of variables is relatively high, the differences in the results are often negligible. For this examination, a four-factor solution was requested. Results of this factor analysis are presented in table 26.

Table 26

Rotated Factor Solution for the Norm Activation Model, Four-Factor Solution

Norm Activation Model Statement	Construct	Factor 1	Factor 2	Factor 3	Factor 4
Protecting the environment, preserving nature	BA	**.759**	.212	.160	.131
A world at peace, free of war and conflict	BA	**.696**	.306*	.089	.125
Social justice, correcting injustice, care for the weak	BA	**.565**	.252	.225	.075
Honoring parents and elders, showing respect	CV	.401*	**.778**	.198	.155
Family security, safety for loved ones	CV	.398*	**.749**	.165	.129
Self-discipline, self-restraint, resistance to temptation	CV	.359*	**.543**	.219	.361*
Authority, the right to lead or command	EV	.131	.260	**.763**	.163
Influential, having an impact on people and events	EV	.149	.130	**.653**	.130
Wealth, material possessions, money	EV	.169	.069	**.627**	.208
A varied life, filled with challenge, novelty, and change	OC	.151	.161	.116	**.881**
An exciting life, stimulating experiences	OC	.151	.301*	.288	**.596**
Curious, interested in everything, exploring	OC	.026	-.008	.247	**.308**
Eigenvalues		5.958	1.853	1.294	1.065

BA=Biospheric/Altruistic values; CV=Conservation values; EV=Egoistic values; OC=Openness to Change

*= loadings of greater than 0.30

Analysis of the four-factor solution indicates this scale performed exactly as the theory indicated. A four-factor solution is confirmed in this study. Further, the four-factor solution using the principal axis factoring analysis places each corresponding item with its corresponding construct, just as theory would dictate. Further, the eigenvalues for each factor are greater than 1.0, suggesting, based on the Kaiser method, that four factors exist in this data. Therefore, the solution for this study further confirms and supports the theory presented by Stern et al. (1998).

Ecologically Conscious Consumer Behavior Scale Analysis

In this analysis, a 29-item ecologically consumer conscious behavior (ECCB) scale was used to measure environmental behavior patterns of the respondents. The internal reliability measure for this scale is 0.948. As an internal reliablity measure, this score is very good and indicates a strong internal reliablity. Factors possibly affecting the high Cronbach's Alpha measure include a high number of items in the scale analysis, and a good sample size.

Individual item analysis confirms the internal consistency within the scale. However, as shown in table 28, item 21 “I usually purchase the lowest-priced product, regardless of its impact on society” presents a low corrected item-total correlation, and further, if the item is deleted, the internal consistency within the scale would be 0.951. This item presents a lower mean than is expected, suggesting this item represents an anomaly for this data. Response to this item suggests more agreement with the DSP constructs than responses to the other 28 items did.

Further confirmation of the internal reliability and consistency within the scale is presented with the individual construct reliability scores. In table 27, Cronbach’s Alpha scores are presented for the individual constructs represented in the scale. These scores were measured based on theoretical determinants of factors.

Table 27
Individual Reliability Scores for the Constructs with the Ecologically Conscious Consumer Behavior Scale

Ecologically Conscious Consumer Behavior Model Construct (Theory Based Constructs)	Cronbach’s Alpha Score
Recycled Products	.855
Biodegradability	.904
Driving Habits/Oil Dependency	.905
Small Wattage Bulbs	.865
Consumer Purchase	.923
Reduction in Electricity	.727

Analysis of the construct reliabilities indicates that all of the individual reliabilities for this analysis are acceptable in terms of their internal reliability and consistency. Further, the internal consistency measure for the individual constructs further illustrates good reliability measures for the scale as a whole. Each of the internal reliability coefficients is above 0.7, which indicates good internal consistency within the scale.

A confirmatory factor analysis procedure was completed on this scale using principal axis factoring with varimax rotation. Theoretically, six factors are represented in this scale, recycled products, driving habits/oil dependency, biodegradability, consumer purchase, reduction in electricity, and small wattage bulbs. Each factor is represented by a minimum of

two items in the scale. The results of the confirmatory factor analysis procedure, in which six factors are specified in the analysis, are presented in table 29.

Table 28

The Ecologically Conscious Consumer Behavior Model Item Analysis, Means Scores, Corrected Item-Total Correlation and Alpha Score if the Item were Deleted from the Scale

Ecologically Conscious Consumer Behavior Model Statement	Mean Scores	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
1. I buy toilet paper made from recycled paper.	2.62	.521	.947
2. I buy Kleenex made from recycled paper.	2.57	.570	.947
3. I buy paper towels made from recycled paper.	2.55	.580	.947
4. To save energy, I drive my car as little as possible.	2.76	.508	.948
5. To reduce our reliance on foreign oil, I drive my car as little as possible.	2.87	.471	.948
6. I make every effort to by paper products made from recycled products.	2.67	.708	.945
7. I use a low phosphate detergent (or soap) for my laundry.	2.85	.635	.946
8. I have convinced members of my family or friends not to buy some products which are harmful to the environment.	2.87	.640	.946
9. Whenever possible, I buy products packaged in reusable containers.	2.46	.612	.946
10. I try only to buy products that can be recycled.	2.71	.706	.945
11. I normally make a conscious effort to limit my use of products that are made of or use scarce resources.	2.68	.702	.946
12. I will not buy products which have excessive packaging.	2.92	.616	.946
13. When there is a choice, I always choose that product which contributes the least amount of pollution.	2.60	.678	.946
14. If I understand the potential damage to the environment that some products can cause, I do not purchase those products.	2.35	.644	.946
15. I have switched products for ecological reasons.	2.76	.801	.945
16. I have purchased products because they cause less pollution.	2.70	.783	.945
17. I do not buy products in aerosol containers.	2.83	.573	.947
18. When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.	2.73	.751	.945
19. When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the	2.34	.665	.946

environment.			
20. I will not buy a product if the company which sells it is socially irresponsible.	2.48	.558	.947
21. I usually purchase the lowest-priced product, regardless of its impact on society.	2.27	.144	.951
22. I do not buy household products that harm the environment.	2.60	.619	.946
23. I try to buy energy-efficient household appliances.	2.21	.562	.947
24. I always try to use electric appliances (e.g. dishwasher, washer, and dryer) before 10am and after 10pm.	2.66	.556	.947
25. I have tried very hard to reduce the amount of electricity that I use.	2.13	.533	.947
26. I buy high-efficiency light bulbs to save energy.	2.23	.610	.946
27. I have purchased a household appliance because it uses less electricity than other brands.	2.38	.636	.946
28. I have purchased light bulbs that were more expensive but saved money.	2.40	.598	.947
29. I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity that I use.	2.33	.671	.946
Grand Mean	2.57		

Initial analysis of the six-factor analysis for this scale indicates that four distinct factors are present. Factors five and six have only one item with a loading of greater than 0.30. This is item 20: “I will not buy a product if the company which sells it is socially irresponsible” with a loading of 0.458 on factor 5 only. Zero items load at greater than 0.30 on factor six. Thus, the results of this analysis suggest that a four-factor solution may be the most appropriate for this measurement scale in this study. Additional evidence suggesting a four-factor analysis is the eigenvalues for each factor. For the first four factors, eigenvalues are greater than 1.0. Using the Kaiser interpretation of eigenvalues within a factor analysis, four factors are present for this scale in this analysis.In the six-factor analysis, some consistencies in item loadings suggest some explanation for only four factors being distinct within this analysis. The first factor is defined by the items that represent the recycled products and the biodegradability items within

the scale. Although these items were designed to measure different constructs, the constructs are closely related theoretically. Thus, even if these two constructs were separate factors within

Table 29
Rotated Factor Solution for the ECCB, Six-Factor Solution

Ecologically Conscious Consumer Behavior Model Statement	Construct*	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
11. I normally make a conscious effort to limit my use of products that are made of or use scarce resources.	BIO	.755	.182	.129	.096	.079	.053
16. I have purchased products because they cause less pollution.	BIO	.698	.332	.150	.135	.203	.164
10. I try only to buy products that can be recycled.	RP	.695	.216	.144	.176	.034	.095
18. When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.	BIO	.691	.228	.151	.171	.297	.057
8. I have convinced members of my family or friends not to buy some products which are harmful to the environment.	RP	.682	.164	.190	.103	.085	-.117
15. I have switched products for ecological reasons.	BIO	.673	.309	.211	.160	.270	.083
7. I use a low phosphate detergent (or soap) for my laundry.	RP	.649	.187	.184	.185	.075	-.112
9. Whenever possible, I buy products packaged in reusable containers.	RP	.617	.259	.108	.140	-.104	.098
13. When there is a choice, I always choose that product which contributes the least amount of pollution.	BIO	.616	.190	.171	.152	.108	.363
12. I will not buy products which have excessive packaging.	BIO	.613	.205	.125	.093	.190	-.026
6. I make every effort to by paper products made from recycled products.	RP	.602	.208	.463	.111	.046	-.059
14. If I understand the	BIO	.531	.286	.110	.110	.190	.326

potential damage to the environment that some products can cause, I do not purchase those products.							
22. I do not buy household products that harm the environment.	BIO	.489	.296	.064	.052	.465	.043
17. I do not buy products in aerosol containers.	BIO	.465	.198	.081	.195	.364	.055
19. When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.	BIO	.457	.309	.167	.106	.204	.439
26. I buy high-efficiency light bulbs to save energy.	SWB	.263	.738	.058	.098	.056	.098
27. I have purchased a household appliance because it uses less electricity than other brands.	SWB	.266	.727	.106	.055	.104	.085
29. I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity that I use.	SWB	.379	.704	.136	.045	-.046	.109
28. I have purchased light bulbs that were more expensive but saved money.	SWB	.278	.678	.124	.025	.028	.117
23. I try to buy energy-efficient household appliances.	RE	.168	.676	.112	.085	.190	.106
25. I have tried very hard to reduce the amount of electricity that I use.	RE	.164	.661	.109	.093	.159	.005
24. I always try to use electric appliances (e.g. dishwasher, washer, and dryer) before 10am and after 10pm.	RE	.270	.507	.203	.098	.182	-.081
2. I buy Kleenex made from recycled paper.	CP	.256	.164	.872	.009	.095	.053
3. I buy paper towels made from recycled paper.	CP	.255	.166	.827	.079	.080	.062
1. I buy toilet paper made from recycled paper.	CP	.182	.170	.824	.065	.030	.133
4. To save energy, I drive my car as little as possible.	DHO	.290	.142	.080	.860	.080	.124
5. To reduce our reliance on	DHO	.319	.114	.062	.825	.070	.001

foreign oil, I drive my car as little as possible.							
20. I will not buy a product if the company which sells it is socially irresponsible.	BIO	.321	.305	.161	.097	.458	.102
21. I usually purchase the lowest-priced product, regardless of its impact on society.	BIO	-.051	.196	.108	.039	.000	.201
Eigenvalues		9.604	1.839	1.620	1.133	.833	.752

*RP=Recycled Products; DHO=Driving Habits/Oil Dependency; BIO=Biodegradability; CP=Consumer Purchase; RE=Reduction in Electricity; SWB=Small Wattage Bulbs

an analysis, a correlation of these constructs could be expected. Thus, for these items to combine into one factor within a given study would not be unexpected.

Additionally, the second factor combines the items representing the small wattage bulbs and reduction in electricity constructs as defined by theory. Again, these constructs should be expected to produce significant correlation(s) within any given study. Thus, for these items to combine into one factor is not suprising. In fact, the results presented in the first two factors in terms of item loadings, suggest that perhaps this a four-factor scale, with the recycled products and biodegradability constructs representing one factor and the small wattage bulbs and the reduction in electricity constructs representing one factor.

Factor three represents items, as defined by theory, in the consumer purchase construct. This construct represents consumer purchase decisions regarding recycled paper products. This factor provides a distinct representation of these items, as all of the items expected to load on this factor were present. Similarly, factor four represents the two items that were included in the scale to assess the driving habits/oil dependency construct associated with this measurement scale. Only two items represent the driving habits/oil dependency construct theoretically, and our analysis results are consistent with theory.

Two items in this scale loaded poorly across all six factors in this six-factor confirmatory factor analysis. These items were item 20 and 21, respectively: “I will not buy a product if the company which sells it is socially irresponsible” and “I usually purchase the lowest-priced

product, regardless of its impact on society." Each of these items, in theory, is supposed to represent the biodegradability construct. Item 20 produced loading(s) of greater than 0.30 on

Table 30
Rotated Factor Solution for the ECCB, Four-Factor Solution

Ecologically Conscious Consumer Behavior Model Statement	*Construct	Factor 1	Factor 2	Factor 3	Factor 4
11. I normally make a conscious effort to limit my use of products that are made of or use scarce resources.	BIO	**.764**	.153	.125	.079
18. When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.	BIO	**.753**	.222	.141	.156
16. I have purchased products because they cause less pollution.	BIO	**.748**	.330**	.143	.124
15. I have switched products for ecological reasons.	BIO	**.735**	.305**	.200	.145
10. I try only to buy products that can be recycled.	RP	**.697**	.193	.143	.163
8. I have convinced members of my family or friends not to buy some products which are harmful to the environment.	RP	**.677**	.122	.181	.083
12. I will not buy products which have excessive packaging.	BIO	**.647**	.182	.115	.076
7. I use a low phosphate detergent (or soap) for my laundry.	RP	**.646**	.147	.175	.161
13. When there is a choice, I always choose that product which contributes the least amount of pollution.	BIO	**.643**	.218	.178	.157
6. I make every effort to by paper products made from recycled products.	RP	**.600**	.179	.451**	.092
22. I do not buy household products that harm the environment.	BIO	**.584**	.310**	.054	.047
9. Whenever possible, I buy products packaged in reusable containers.	RP	**.584**	.230	.112	.130
14. If I understand the potential damage to the environment that some products can cause, I do not purchase those products.	BIO	**.583**	.314**	.113	.116
17. I do not buy products in aerosol containers.	BIO	**.543**	.211	.072	.183
19. When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.	BIO	**.520**	.354**	.171	.119
20. I will not buy a product if the company which sells it is socially irresponsible.	BIO	**.428**	.334**	.147	.095
26. I buy high-efficiency light bulbs to save energy.	SWB	.298	**.733**	.043	.084
27. I have purchased a household appliance because it uses less electricity than other	SWB	.309**	**.726**	.089	.042

brands.					
23. I try to buy energy-efficient household appliances.	RE	.234	**.690**	.095	.076
29. I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity that I use.	SWB	.389**	**.677**	.126	.032
28. I have purchased light bulbs that were more expensive but saved money.	SWB	.306**	**.672**	.111	.012
25. I have tried very hard to reduce the amount of electricity that I use.	RE	.217	**.658**	.090	.079
24. I always try to use electric appliances (e.g. dishwasher, washer, and dryer) before 10am and after 10pm.	RE	.319**	**.489**	.182	.077
21. I usually purchase the lowest-priced product, regardless of its impact on society.	BIO	-.030	.224	.109	.047
2. I buy Kleenex made from recycled paper.	CP	.281	.180	**.868**	.004
3. I buy paper towels made from recycled paper.	CP	.278	.183	**.825**	.073
1. I buy toilet paper made from recycled paper.	CP	.200	.195	**.820**	.065
4. To save energy, I drive my car as little as possible.	DHO	.321**	.155	.079	**.885**
5. To reduce our reliance on foreign oil, I drive my car as little as possible.	DHO	.349**	.109	.057	**.786**
Eigenvalues		9.604	1.839	1.620	1.133

*RP=Recycled Products; DHO=Driving Habits/Oil Dependency; BIO=Biodegradability; CP=Consumer Purchase; RE=Reduction in Electricity; SWB=Small Wattage Bulbs
**=item factor loadings greater than 0.30.

factors 1, 2, and the item's highest loading of 0.458 on factor 5. This suggests that item 20 may fit within one of the factors in a confirmatory factor analysis procedure with just four factors. Item 21 produced no significant loadings on any of the factors. Furthermore, this item produced the lowest corrected item-total correlation score, and if deleted, the internal consistency for the scale would be increased. This suggests possibly this item should be removed from the scale, or re-worded to better fit. An analysis with this item removed was not conducted as this item has been used in previous studies (Roberts and Bacon, 1997). Thus, based on theory, the additional analysis was not necessary.

Based on the examination of the six-factor analysis results, a four-factor confirmatory factor analysis procedure was completed using principal axis factoring with varimax rotation. Results of this procedure are presented in table 30. The analysis results in the four-factor

confirmatory factor analysis procedure indicate that a four-factor solution is the best solution for this study. Similar to the six-factor solution, the biodegradability items and the recycled products items grouped together to form factor 1. Also, the small wattage bulbs and the reduction and electricity items grouped together to form factor 2. Likewise, factors 3 and 4 for the four-factor solution were represented by the items for consumer purchase and driving habits/oil dependency, respectively. Likewise, the eigenvalues for each of the factors were greater than 1.0. This is expected based on the Kaiser interpretation of eigenvalues for factor analysis procedures.

There were a number of items that cross-loaded onto other factors, with values of greater than 0.30. In each case, the item(s) with multiple loadings based on content would be expected to correlate with the factor in which the higher loadings is occurring. For example, item 6 “I make every effort to buy paper products made from recycled products” represents the biodegradability construct, but the item also cross-loads onto the consumer purchase construct. This should be expected based on the content of the statement, indicating a purchase decision. Additionally, for the four-factor analysis, statement 20 “I will not buy a product if the company which sells it is socially irresponsible” loads significantly onto factor 1, which in theory is where this item should be placed. However, item 21 “I usually purchase the lowest-priced product, regardless of its impact on society” again does not load significantly onto either factor. This, along with previous item analysis evidence, suggests that this item should be removed or deleted from the scale.

Dominant Social Paradigm Scale Analysis

A twelve item scale was used to measure respondent attitudes toward the political, technological, and economic aspects of the Dominant Social Paradigm. This scale produced an internal reliability score of 0.418 for this study. This is a very weak score in measurement terms of internal reliability within this scale. In most instances, researchers would question the reliability of this scale. In fact, a determination of what has actually been measured would be

questioned by the psychometric community. Item analysis results of this scale (presented in table 31) provide additional evidence on the internal reliability measure associated with this scale.

Item analysis indicates a wide variance in the corrected item-total correlation scores within this scale. Two items present negative corrected item-total correlation scores. They are "The average person should have more input in dealing with social problems" and "Political equality can be attained only by major changes in election procedures." For each of these items, the overall alpha score would be higher if the item was deleted from the scale. Thus, would deletion of these two items create an acceptable internal reliability score? Perhaps these two statements should be evaluated for their content.

A closer review on the content validity relative to the statements in this scale indicates that some of these statements are evaluating an unrealistic opinion statement versus an attitude toward the overall concept of the political, technological or economic process in our society. For example, item 7 "Political equality can be attained only by major changes in election procedures" is a statement that could create discussion and conflict regarding the statement, given recent events in the political process. "The average person should have more input in dealing with social problems" may also stimulate more discussion and conflict than is intended in this scale. Further, determining if a person should have more input into social problems may not be specific enough to assess the purpose behind the DSP constructs.

Individual construct reliabilities (table 32), based on theory, further indicate the issues associated with this scale. As predicted by the item analysis, the technological construct is the most reliable with an alpha score of 0.530. This score is low by Cronbach's Alpha score measurement standards, but the score is relatively high for the constructs in this scale, given the low overall internal consistency measure. Very low alpha scores for the political and economic factors further indicate the problems associated with these items, and the concepts they represent. These low individual reliabilities and the results in the corrected item-total

correlation scores, suggest that perhaps this scale is not measuring what it is intended to measure.

Table 31
The Dominant Social Paradigm Item Analysis, Means Scores, Corrected Item-Total Correlation and Alpha Score if the Item were Deleted from the Scale

DSP Statement	Mean Scores	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
1. Advancing technology provides us with hope for the future.	1.68	.361	.333
2. The bad effects of technology outweigh its advantages.	2.33	.348	.329
3. Future resource shortages will be solved by technology.	2.19	.199	.379
4. Advancing technology is out of control.	2.39	.155	.395
5. The average person should have more input in dealing with social problems.	3.08	-.022	.445
6. Business interests have more political power than individuals.	3.07	.051	.430
7. Political equality can be attained only by major changes in election procedures.	2.37	-.035	.456
8. Political questions are best dealt with through free market economics.	2.39	.144	.399
9. We focus too much on economic measures of well-being.	2.72	.097	.389
10. Individual behavior should be determined by economic self-interest, not politics.	2.10	.015	.436
11. The best measure of progress is economic.	2.44	.211	.378
12. If the economy continues to grow, everyone benefits.	2.53	.226	.369
Grand Mean	2.44		

Further analysis of this scale was completed by conducting a factor analysis on the scale in which three factors, political, technological, and economic, were requested during the analysis procedure. The expected results for the factor analysis procedure are expected be flawed, based on the internal consistency measure. Results of this analysis procedure are presented in table 33. Analysis of the factor analytic results provides additional information relative to the internal consistency issue present within this scale. The factor analysis results indicated that three of the technological items do load together, (items 1, 3, and 4) onto factor 1.

Table 32
Individual Reliability Scores for the Constructs within the Dominant Social Paradigm

Dominant Social Paradigm Construct (Theory Based Constructs)	Cronbach's Alpha Score
Political	.253
Technological	.530
Economic	.145

Further, two of the economic items, (items 11 and 12) and one technological item (item 2) present factor loadings together to form factor 2. Only one item, (item 6), a political item with some economic content, has a loading higher than 0.30 to form factor 3. These factor loadings indicate that the technological factor may have provided an appropriate measure of this factor, as three of these items loaded with some degree of satisfaction to determine one factor. The loadings on this factor are not overly high, but considering the low internal consistency scores

Table 33:
Rotated Factor Solution for the DSP, Three-Factor Solution

Dominant Social Paradigm Statement	Construct	Factor 1	Factor 2	Factor 3
3. Future resource shortages will be solved by technology.	Technological	.652	.055	.003
4. Advancing technology is out of control.	Technological	.552	-.039	.189
1. Advancing technology provides us with hope for the future.	Technological	.432	.386	-.007
5. The average person should have more input in dealing with social problems.	Political	.190	-.083	.046
11. The best measure of progress is economic.	Economic	-.114	.485	.084
2. The bad effects of technology outweigh its advantages.	Technological	.155	.460	-.042
12. If the economy continues to grow, everyone benefits.	Economic	-.078	.435	.081
8. Political questions are best dealt with through free market economics.	Political	-.012	.270	-.166
10. Individual behavior should be determined by economic self-interest, not politics.	Economic	-.171	.242	-.231
6. Business interests have more political power than individuals.	Political	.006	.093	.677
9. We focus too much on economic measures of well-being.	Economic	.083	.190	.279
7. Political equality can be attained only by major changes in election procedures.	Political	-.068	.098	-.257
Eigenvalues		1.125	.980	.783

and the negative effects of some additional item loadings, the factor scores for the three items representing this factor are encouraging. The factor loading for the one item representing factor 3 is most sufficient, but one item does not always provide a good measurement for a construct, in particular with low internal consistency measures prior to the factor analysis procedure. Further, the factor loadings for the three items representing factor 2 are similar in size. The loadings are not high, but they are reasonably close between the items. Again, low internal consistency scores and the negative effect of some additional item loadings, could be affecting the item scores. Additionally, eigenvalues for the three factors do not support a three-factor solution. Examination of these values suggests that a one-factor solution is the best solution. However, interpretation of the eigenvalues for this analysis is more difficult considering the low reliability measures present within the scale. More error is present in the factor analysis results, creating uncertainty with the results related to this scale.

Five items within the scale do not present a loading of greater than 0.30 for either factor. These five items are “The average person should have more input in dealing with social problems”, “Political questions are best dealt with through free market economics”, “Individual behavior should be determined by economic self-interest, not politics”, “We focus too much on economic measures of well-being” and “Political equality can be attained only by major changes in election procedures.” Similarly, these same items also have the lowest item-total correlation scores from table 30. Therefore, further analysis of this scale without these five items provides the following results (see table 34).

In the analysis in which five items have been removed, the internal consistency score was a dismal 0.244. Although five items have been removed, the internal consistency measure for this scale has diminished. This, along with evidence that the internal reliability measure for just the technological items, suggests that the political and economic items are very suspect. The analysis of this scale with missing items further illustrates the problems associated with this measurement instrument.

Table 34
DSP Item-Analysis with Five Items Deleted from the Scale

DSP Statement	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
1. Advancing technology provides us with hope for the future.	.194	.287
2. The bad effects of technology outweigh its advantages.	.120	.194
3. Future resource shortages will be solved by technology.	.208	.282
4. Advancing technology is out of control.	.196	.185
11. The best measure of progress is economic.	.100	.120
12. If the economy continues to grow, everyone benefits.	.121	.115
6. Business interests have more political power than individuals.	.027	.306

Specific Environmental Problem Statement Scale Analysis

In this analysis, the fourteen items used to assess specific environmental problems for the respondents are being treated as a scale. Although these items were not intended to represent a specific scale with a specific purpose, for the purposes of this study, these items are evaluated as if they represent a single scale. The primary reason for treating these items as a scale is that each of the item areas represents a specific environmental issue. The issue statements are specific to a particular environmental problem, yet the problem areas are not necessarily related. However, it is possible to assume that individuals should respond similarly to all environmental issues regardless of their overall attitude toward the environment. Some variation is expected, as individuals are likely to feel more strongly toward certain environmental issues as opposed to others. These individuals would have stronger opinions relative to issues that most likely affect them.

Internal reliability analysis of this scale produced a Cronbach's Alpha coefficient of 0.774. This score represents a good overall internal consistency measure. Additional support for these items being treated as a scale is the corrected item-total correlation scores (see table 35) as each item within the scale is reasonably close in value. Further, only one item, if removed, would produce a higher overall internal consistency measure for the scale. This item "World

population levels are well within what the world can support", if removed, would produce a higher overall internal consistency measure. Content analysis of this item would indicate that this item suggests this item is perhaps more general in nature, and not an issue that is likely to affect the respondent directly.

Table 35
Specific Environmental Problem Statement(s) Item Analysis

Specific Environmental Problem Statement	Mean Scores	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
1. Global warming is not really a problem.	1.83	.505	.748
2. The problems relating to ozone depletion are overstated.	2.02	.362	.763
3. Our present rate of consumption can be maintained with no ecological problems.	1.99	.293	.769
4. Since the volume of water on the earth doesn't change, shortages cannot occur.	2.00	.332	.766
5. World population levels are well within what the world can support.	2.61	.217	.775
6. Agricultural productivity will decline in the near future.	2.36	.386	.761
7. Food shortages are possible in the near future, even in developed countries.	2.24	.455	.754
8. Serious shortages of some natural resources will occur in the near future.	2.01	.505	.750
9. Continued use of chemicals in agriculture will damage the environment beyond repair.	2.07	.506	.749
10. Some living things are unnecessarily threatened with extinction.	1.98	.282	.770
11. Destruction of rainforests will have long-term environmental consequences.	1.65	.451	.755
12. Many types of pollution are rising to dangerous levels.	1.78	.524	.748
13. Nuclear power is the solution to energy shortages.	1.97	.356	.763
14. Nuclear accidents causing long-term damage are likely in the future.	2.31	.262	.772
Grand Mean	2.06		

Factor analysis was also conducted on this scale. The analysis completed was a principal axis factor analysis procedure with varimax rotation. In theory, four separate specific items were addressed in the overall scale. They are environmental problems, shortages,

extinctions, and nuclear. Thus, a four-factor solution was assessed in the initial factor analysis solution. Table 36 presents the results of the initial four-factor solution for this scale.

Factor analysis results of the four-factor solution indicate initially, that it is unlikely four factors are present within the data. Primarily, the factor solution indicates a one-factor solution may be the best solution for the data in this study. In fact, only five factor loadings of greater than 0.30 occur on any factor except for factor 1. None of these factor loadings occur on factor 4. In addition, two items “Nuclear power is the solution to energy shortages” and “World population levels are well within what the world can support” do not load at greater than 0.30 on either of the factors. Similarly, only one eigenvalue is greater than 1.0. Based on Kaiser’s determination on number of factors, a one-factor solution is indicated. Based on the evidence presented in table 36, a one-factor solution was attempted and the results are presented below in table 37.

Factor analytic results of the one-factor solution for the specific environmental problem statements are presented in table 37. The result of this solution was derived using principal axis factor analysis with varimax rotation. Analysis of these results indicate that two items, SEP14 and SEP5, “Nuclear accidents causing long-term damage are likely in the future” and “World population levels are well within what the world can support” do not factor load at greater than 0.300 in the one-factor solution. This is consistent with the four-factor solution in which neither of these items loaded at greater than 0.300 on any factor. This suggests these items do not belong in this scale. Further testing of this scale is needed to confirm the assertion that these items are not necessary for this scale.

Table 36

Four-Factor Solution for the Specific Environmental Problem Statement Scale

Specific Environmental Problem Statement	Construct	Factor 1	Factor 2	Factor 3	Factor 4
12. Many types of pollution are rising to dangerous levels.	Extinction	.629	-.192	.401*	.098
9. Continued use of chemicals in agriculture will damage the environment beyond repair.	Shortage	.605	-.177	-.011	.281
7. Food shortages are possible in the near future, even in developed countries.	Shortage	.582	-.251	-.211	-.283
8. Serious shortages of some natural resources will occur in the near future.	Shortage	.568	-.196	-.041	-.080
1. Global warming is not really a problem.	Environmental Problem	.559	.303*	-.081	-.086
11. Destruction of rainforests will have long-term environmental consequences.	Extinction	.536	-.113	.258	-.017
6. Agricultural productivity will decline in the near future.	Shortage	.454	-.179	-.317*	.122
14. Nuclear accidents causing long-term damage are likely in the future.	Nuclear	.453	-.273	-.037	.065
2. The problems relating to ozone depletion are overstated.	Environmental Problem	.430	.306*	.014	-.116
4. Since the volume of water on the earth doesn't change, shortages cannot occur.	Environmental Problem	.366	.278	-.003	-.050
10. Some living things are unnecessarily threatened with extinction.	Extinction	.321	.010	.205	-.198
13. Nuclear power is the solution to energy shortages.	Nuclear	.274	.242	-.108	.132
5. World population levels are well within what the world can support.	Environmental Problem	.211	.210	.018	.099
3. Our present rate of consumption can be maintained with no ecological problems.	Environmental Problem	.327	.504*	.011	.132
Eigenvalues		2.244	.954	.675	.612

*factor loadings of greater than 0.30 on any factor other than factor 1.

Table 37
One-Factor Solution for the Specific Environmental Problem Statement Scale

SEP Item	Raw	Rescaled
	Factor 1	
12. Many types of pollution are rising to dangerous levels.	.439	.600
9. Continued use of chemicals in agriculture will damage the environment beyond repair.	.476	.591
8. Serious shortages of some natural resources will occur in the near future.	.412	.575
7. Food shortages are possible in the near future, even in developed countries.	.439	.552
1. Global warming is not really a problem.	.477	.544
11. Destruction of rainforests will have long-term environmental consequences.	.379	.537
13. Nuclear power is the solution to energy shortages.	.336	.453
6. Agricultural productivity will decline in the near future.	.359	.437
2. The problems relating to ozone depletion are overstated.	.332	.423
4. Since the volume of water on the earth doesn't change, shortages cannot occur.	.305	.362
10. Some living things are unnecessarily threatened with extinction.	.256	.319
3. Our present rate of consumption can be maintained with no ecological problems.	.225	.309
14. Nuclear accidents causing long-term damage are likely in the future.	.214	.271
5. World population levels are well within what the world can support.	.153	.212

Hypothesis Testing

In this study, seven hypotheses were tested, each assuming a linear relationship between the independent and dependent variables. Multiple regression analyses, using least squares regression modeling, were completed to analyze each relationship. For each hypothesis, a multiple regression model fit was determined using F-values and P-values. The analyses for each hypothesis are presented. Implications and assumptions regarding each relationship are examined. In general, the following guidelines were used in determining the multiple regression models for each hypothesis (Sullivan, 2007):

1. Examine the correlation matrix for all variables used in the regression equation to identify the correlation between the explanatory variables and the response variable. High

correlation does not determine multicollinearity exists, but it is certainly a sign that multicollinearity is possible.

2. Remember to include all possible explanatory variables in the model in relation to the response model.
3. Using a backwards stepwise regression, analyze individual slope coefficients and remove explanatory variables based on high p-values. Explanatory variables should be removed from the model one per analysis. Further, the selection of the variable to remove should be made based on the explanatory variable with the highest p-value in the preceding analysis.
4. Continue with the previous step until all slope coefficients are significantly different from zero.
5. Verify the appropriateness of the model by reviewing residual plots.

For each of the models, explanatory variables were removed based on the guidelines above. Further, theoretical and measurement determinants also played a role in the removal or non-removal of explanatory variables from a specified regression model.

To begin, each of the items worded in a negative manner have been re-coded so that the scoring for each item is consistent. For the items associated with hypothesis one, support for the DSP items would be indicated in respondents choosing either “Strongly Agree” or “Agree” on the survey instrument. These responses were coded as a “1” or “2” respectively, for use in the data analysis. Therefore, overall support for the DSP scale would be indicated with an overall mean score of “24” or less, and individual construct scores of “8” or less. For the items in the Norm Activation Model, responses to each were given using the following with the corresponding data code: NI=Not Important=1, SI=Strongly Important=2, MI=Moderately Important=3, VI=Very Important=4, EI=Extremely Important=5. For these items a higher score indicates greater support for the values. Thus, a higher overall mean score, greater than 36, and higher overall cluster scores, greater than 9, indicate greater support for the values measured.

Hypothesis One

To review, hypothesis one examines the relationship of the DSP constructs (political, technological, and economic) with the respondents who exhibit values associated with the biospheric/altruistic and openness to change clusters. In this hypothesis, the expected relationships would be negative.

Hypothesis 1: Respondents with greater confidence in the DSP constructs (political, economic, and technological) will exhibit a statistically significant smaller amount of environmental concern as measured by the biospheric/altruistic and openness to change value clusters.

For example, if the individual scores high in the DSP clusters, a low value would be expected for the scores on each of the environmental value clusters, thus producing a negative relationship. Individuals who score high on the bioshperic/altruistic and openness to change value clusters are generally considered to be more environmentally sensitive. Further, individuals who score high on the DSP are generally thought to be less environmentally sensitive and more supportive of the status quo.

For this analysis, the overall means of each scale and the individual clusters are presented in Table 38.

Table 38
Mean Scores for Individual Scales and Clusters for the DSP and the NAM

Scale or Cluster	Mean
Dominant Social Paradigm	26.98
Political	8.5
Technological	9.6
Economic	8.6
Norm Activation Model	44.6
Biospheric/Altruistic	11.7
Egoistic	9.6
Openness to Change	10.5
Conservative	12.6
NEP	33.43
SEP	28.60

Examination of the mean scores reveals that for the norm activation model, the mean scores fall in the expected range to support the values presented. However, the mean scores reported for the DSP do not fall within the expected range. This may be explained by a number of factors. First, in the scale, there were several items that were worded negatively to stimulate thought among the respondents. However, these items were not clearly a negative statement and could have been misinterpreted when responding to the scale. Second, previous measurement issues have surfaced in the initial analysis of this scale. Internal consistency scores are poor for the total scale and for the individual constructs. This indicates the scale is likely a poor measurement instrument for this study. Lastly, the mean scores associated with the DSP and the individual constructs could indicate that respondents do not support the dominant social paradigm, and that more support for pro-environmental attitudes and values exists.

Multiple regression analyses were performed using the current mean scores for the DSP scale and the scale constructs. For the relationship examined in hypothesis one, a negative relationship is expected between all DSP constructs and the Norm Activation Model. Using the Norm Activation Model scale score as the dependent variable and the political, technological, and economic constructs of the DSP as the independent or predictor variables, a least squares multiple regression analysis was performed. In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=\beta_3=0$ versus H_1: at least one $\beta \neq 0$.

Where β_1=Political, β_2=Economic and β_3=Technological

Results of the multiple regression analysis for hypothesis one yielded the following model and model statistics:

y=48.79-.377(political)-.017(economic)-.087(technological)

Table 39
Model Statistics for Hypothesis 1, NAM as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	48.759	3.961	12.311	.000	40.963	56.555
Political	-.377	.295	-1.276	.203	-.959	.205
Economic	-.017	.264	-.065	.948	-.537	.502
Technological	-.087	.245	-.353	.724	-.569	.396

The overall model yielded an F-statistic of 0.579 and a p-value of 0.629, indicating rejection of the hypothesis. This suggests that each of the beta coefficients could equal zero, and thus rejection of a linear relationship between the norm activation model and the constructs associated with the DSP. The individual predictor variables also indicate acceptance of the null hypothesis, indicating a non-linear relationship with the norm activation model. Further evidence of this non-linear relationship is found in the 95% confidence interval estimates for each predictor variable. Each of the 95% confidence interval estimates includes zero as a possible value, further supporting the null hypothesis.

The beta coefficients do indicate that a possible negative relationship exists between the variables, as predicted, but the relationship is not significant enough to reject the null hypothesis. This could be due to measurement error present in the DSP scale, or the relationship is not strong enough to permit rejection of the null hypothesis.

To further examine the relationship outlined by hypothesis one, the following regression models were constructed. First, a regression model was constructed in which the biospheric/altruistic cluster was designated as the dependent variable, with each of the DSP constructs used as predictors or dependent variables. In this model, a negative association between the DSP constructs and the biospheric/altruistic value cluster would be expected, as individuals who score high in this cluster are likely to be environmentally friendly. In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=\beta_3=0$ *versus* H_1*: at least one* $\beta \neq 0$.

Where β_1=Political, β_2=Economic and β_3=Technological

Results of the multiple regression analysis for hypothesis one yielded the following model and model statistics:

y=12.562-.148(political)+.039(economic)+.007(technological)

Table 40
Model Statistics for Hypothesis 1, Biospheric/Altruistic Cluster as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	12.562	1.397	8.992	.000	9.812	15.312
Political	-.148	.104	-1.424	.156	-.354	.057
Economic	.039	.093	.418	.676	-.144	.222
Technological	.007	.086	.080	.936	-.163	.177

Overall model statistics indicate an F-value of 0.721 and a p-value of 0.540 for the regression model in which the bioshperic/altruistic value cluster is the independent variable. These resulting statistics suggest that the null hypothesis should not be rejected, and that each of the beta coefficients could equal zero. Further, this result strongly suggests that the relationship between the predictor variables and the independent variable is not linear. Individual predictor statistics indicate that, possibly, a negative relationship exists between the political construct and the bioshperic/altruistic value cluster, but not at an acceptable level. The economic and technological constructs show a value of almost zero in the individual statistics and thus further support the null hypothesis in this analysis.

The second part of hypothesis one examines the relationship of the DSP constructs with the dependent variable “openness to change” value cluster. Again, the DSP constructs are used as the predictor variables. A negative relationship is expected and would be predicted.

In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=\beta_3=0$ versus H_1: at least one $\beta \neq 0$.

Where β_1=Political, β_2=Economic and β_3=Technological

Results of the multiple regression analysis for hypothesis one yielded the following model and model statistics:

y=11.684-.109(political)-.015(economic)-.010(technological)

Table 41
Model Statistics for Hypothesis 1, Openness to Change Cluster as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	11.684	1.253	9.325	.000	9.217	14.150
Political	-.109	.093	-1.162	.246	-.293	.075
Economic	-.015	.083	-.180	.857	-.179	.149
Technological	-.010	.078	-.130	.897	-.163	.143

The F-value is 0.481 with a p-value of 0.696 for the overall model. Similar to the results associated with the biospheric/altruistic value cluster, the hypothesis is rejected. This suggests a non-linear relationship between the dependent and independent variables in this regression model. The individual predictors appear to have a negative relationship with the DSP constructs, however not being able to reject the null hypothesis would suggest that this negative relationship may not exist. Further, the 95% confidence intervals for the individual predictors include both positive and negative values, along with the zero value, resulting in the relationship being non-linear.

Overall, the results of hypothesis one suggest that no linear relationship exists between the DSP and the NAM and the value clusters, biospheric/altruistic and openness to change. Although a negative relationship was expected, it is possible that no relationship for these scales should have been expected. The scales represent different attitudes toward the environment in theory, and thus a negative or no relationship between these variables should have been accepted.

Hypothesis Two

Hypothesis two examines the relationship of the DSP constructs and the egoistic and conservative value clusters within the norm activation model. In this scale, the egoistic and

conservative value clusters are generally believed to have less values associated with a pro-environmental stance, thus a positive linear relationship would be predicted with the DSP constructs. As noted in table 38, the value cluster means are within the acceptable range for support of the value clusters as expected by theory. However, the mean scores for the DSP are outside of the accepted range for acceptance of these clusters. With this in mind, a multiple regression model using the egoistic value cluster as the dependent variable and the DSP construct variables as the predictors was constructed.

In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=\beta_3=0$ *versus* H_1*: at least one* $\beta \neq 0$.

Where β_1*=Political,* β_2*=Economic and* β_3*=Technological*

Results of the multiple regression analysis yielded the following model and model statistics:

y=10.045+.027(political)-.063(economic)-.004(technological)

Table 42
Model Statistics for Hypothesis 2, Egoistic Cluster as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	10.045	1.210	8.304	.000	7.664	12.426
Political	.027	.090	.297	.767	-.151	.204
Economic	-.063	.081	-.776	.438	-.221	.096
Technological	-.004	.075	-.059	.953	-.152	.143

Overall model test statistics are an F-value of 0.228 and a p-value of .877, indicating rejection of the hypothesis. Similar to the results from hypothesis one, this relationship is likely non-linear with no reason to reject the null hypothesis. Likewise, the 95% confidence intervals include the value of zero, further confirming rejection of the hypothesis. For this analysis, the individual beta coefficients are very close to zero in value, with p-values far from the acceptable range. Thus, the relationship of the DSP constructs with the egoistic value cluster appears to be non-linear and no positive or negative relationship was detected.

A second multiple regression model follows using the conservative value cluster as the dependent variable and the DSP constructs as the predictor variables. A positive relationship between these variables is expected, as individuals who score high on the conservative value cluster are likely to be more supportive of DSP constructs. In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=\beta_3=0$ versus H_1: at least one $\beta \neq 0$.

Where β_1=Political, β_2=Economic and β_3=Technological

Results of the multiple regression analysis yielded the following model and model statistics:

y=13.361-.070(political) +.042(economic)-.066(technological)

Table 43
Model Statistics for Hypothesis 2, Conservative Cluster as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	13.361	1.365	9.790	.000	10.675	16.047
Political	-.070	.102	-.685	.494	-.270	.131
Economic	.042	.091	.463	.644	-.137	.221
Technological	-.066	.084	-.786	.433	-.233	.100

Overall model statistics indicate an F-value of 0.364 with a corresponding p-value of 0.779. As with the previous multiple regression analyses, the hypothesis will be rejected. Further, the relationship of these variables is assumed to be non-linear, as the high p-value scores would indicate. Due to the high model test statistics, it is difficult to determine if these variables have any relationship to each other, and if so, if that relationship is positive or negative.

Thus, based on the results of the multiple regression model(s) associated with hypothesis two, the expected relationship(s) between the DSP constructs and the egoistic and conservative value clusters likely do not exist. This could be the result of the measurement issues that are present within the DSP scale. Further, the expected relationships between these

variables simply may not exist and thus, additional study is needed. Based on the lack of model fit within the regression analysis, no linear relationship exists within this study among the variables for hypothesis two.

Hypothesis Three

To examine this hypothesis, a multiple regression model to evaluate the linear relationship of the biospheric/altruistic and openness to change value clusters on individual concern for the environment is examined. Concern for the environment for this hypothesis is represented by the specific environmental attitude statements and the New Environmental Paradigm (NEP) scale. A positive linear relationship is expected between these variables.

Hypothesis 3: Respondents with higher measures in the biospheric/altruistic and openness to change value clusters will exhibit a statistically significant amount of greater concern for the environment as shown in the measures of specific and general environmental attitudes.

The biospheric/altruistic and openness to change value clusters, in theory, should represent individuals who are supportive of the environment. As a result, a positive relationship between these value clusters and respondents who respond favorably to the NEP and the specific environmental attitudes scale is expected in this analysis. In this analysis, the values for a positive biospheric/altruistic and openness to change value are represented by a higher score within the value scale. However, scores that represent a higher or greater concern for the environment in the specific environmental attitude scale and the NEP are represented by lower score values within their given scales. Thus, a positive relationship between the dependent and predictor variables is likely to be represented by negative beta coefficients based on the scoring of each individual scale. Similar to the previous hypotheses, the same assumptions with the null and alternative hypotheses are expected. In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=0$ *versus* H_1*: at least one* $\beta \neq 0$.

Where β_1=Biospheric/Altruistic, β_2=Openness to Change

Results of the multiple regression analysis yielded the following model and model statistics in which the NEP (general environmental attitudes) is the dependent variable:

y=37.412-.323(biospheric/altruistic)-.018(openness to change)

Table 44
Model Statistics for Hypothesis 3, NEP as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	37.412	1.478	25.319	.000	34.503	40.320
Biospheric/Altruistic	-.323	.112	-2.894	.004	-.542	-.103
Openness To Change	-.018	.125	-.148	.882	-.264	.227

The overall model test statistics specify an F-statistic of 5.145 with a corresponding p-value of 0.006. The test statistic result of the multiple regression models indicate the null hypothesis should be rejected, and that a linear relationship exists between the predictor and dependent variables. Similarly, the test results suggest that at least one of the slope coefficients is not equal to zero. Reviewing the individual slope coefficient statistics, the predictor variable, biospheric/altruistic, is the slope coefficient not equal to zero. The openness to change predictor variable is not statistically significant enough to reject the null hypothesis for this variable and thus this slope coefficient could equal zero. As discussed previously, the results are as expected in this analysis. As an individual becomes more altruistic and concerned with the environmental values (biosphere), their scores will rise within this value cluster, this individual will likely become more supportive of the environment and thus provide lower scores on the NEP scale. Similarly, as individual scores rise with the openness to change cluster, this is generally an indicator of pro-environmental attitudes. For this analysis, the individual predictor variables suggest that no linear relationship exists between the openness to change value cluster and the NEP. Results would indicate that removal of the openness to change predictor model may enhance the predictive relationship within the model.

Results of the multiple regression analysis yielded the following model and model statistics in which the specific environmental problem items (treated as one scale) are the dependent variable:

y=33.961-.356(biospheric/altruistic)-.112(openness to change)

Table 45
Model Statistics for Hypothesis 3, SEP as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	33.961	1.429	23.764	.000	31.148	36.774
Biospheric/Altruistic	-.356	.108	-3.301	.001	-.568	-.144
Openness To Change	-.112	.120	-.930	.353	-.349	.125

The overall model test statistics specify an F-statistic of 8.339 with a corresponding p-value of 0.000. The test statistic result of the multiple regression models indicate the null hypothesis should be rejected and that a linear relationship exists between the predictor and dependent variable(s). Similarly, the test results suggest that at least one of the slope coefficients is not equal to zero. Reviewing the individual slope coefficient statistics, the predictor variable, biospheric/altruistic, is the slope coefficient not equal to zero. The openness to change predictor variable is not statistically significant enough to reject the null hypothesis for this variable, and thus this slope coefficient could equal zero. As discussed previously, the results are as expected in this analysis. As an individual becomes more altruistic and concerned with the environmental values (biosphere), scores will rise within these constructs, as measured by the Norm Activation Model, and this individual will likely become more supportive of specific environment problem issues and thus provide lower scores on the specific environmental issues measured.

Overall, the results for the linear relationships presented in hypothesis three were as expected. Each model presented rejected the null hypothesis, suggesting a linear relationship exists. Individual predictor analysis confirmed that in both models the biospheric/altruistic value cluster has a positive linear relationship with the NEP and the SEP. Further, the openness to

change value cluster results indicates a nonlinear relationship with overall environmental attitudes, NEP and SEP.

Hypothesis Four

To examine this hypothesis, a multiple regression model to evaluate the linear relationship of the egoistic and conservation value clusters on individual concern for the environment is examined. Concern for the environment for this hypothesis is represented by the specific environmental attitude statements and the New Environmental Paradigm (NEP) scale.

Hypothesis 4: Respondents with higher measures in the egoistic and conservation value clusters will exhibit a statistically significant amount of lesser concern for the environment as shown in the measures of specific and general environmental attitudes.

Based on theory, a negative linear relationship is expected between the predictor variables and each dependent variable. The egoistic and conservation value clusters, in theory, should represent individuals who are less supportive of the environment. In essence, these value clusters should represent individuals who are reluctant to change, and are concerned for themselves, and thus represent a DSP orientation in general. As a result, a negative relationship between these value clusters and respondents who respond favorably to the NEP and the specific environmental attitudes scale is expected in this analysis. The values for a positive egoistic and conservation value are represented by a higher score within the value scale. However, scores that represent a higher or greater concern for the environment in the specific environmental attitude scale and the NEP are represented by lower score values within their given scales. Thus, a negative relationship between the dependent and predictor variables is likely to be represented by positive beta coefficients based on the scoring of each individual scale. Similar to the previous hypotheses, the same assumptions with the null and alternative hypotheses is expected. In this analysis, the following null and alternative hypotheses were tested:

$H_o=\beta_1=\beta_2=0$ *versus* H_1*: at least one* $\beta \neq 0$.

Where β_1=Egoistic, β_2=Conservation

Results of the multiple regression analysis yielded the following model and model statistics in which the NEP (general environmental attitudes) is the dependent variable:

y=34.2113+.421(egoistic)-.383(conservation)

Table 46
Model Statistics for Hypothesis 4, NEP as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	34.211	1.480	23.116	.000	31.298	37.124
Egoistic	.421	.133	3.163	.002	.159	.682
Conservation	-.383	.118	-3.255	.001	-.615	-.151

The overall model test statistics specify an F-statistic of 7.068 with a corresponding p-value of 0.001. These test statistic results of the multiple regression model indicates the null hypothesis should be rejected and that a linear relationship exists between the predictor and dependent variables. Similarly, the test results suggest that at least one of the slope coefficients is not equal to zero. Reviewing the individual slope coefficient statistics, the predictor variables, egoistic and conservation, the slope coefficients are not equal to zero. The results are as expected in this analysis for the egoistic predictor. As an individual becomes more egoistic and concerned with themselves and less concerned with the environment, there scores will rise within the Norm Activation Model, this individual will likely become less supportive of the environment and thus provide higher scores on the NEP scale.

However, for the conservation value cluster, the results are unexpected. The conservation value cluster is designed to measure individual values relative to change. For an individual to be considered conservative, scores on items in this cluster will represent individuals who dislike change and represent strong family values and conservative politics. Thus, if an individual scores high on the items in this cluster, they are expected to represent the conservation values. Further, theory would state that individuals in this cluster are expected to be less supportive of the environment in general. The results of this analysis indicate that a

positive relationship exists between this predictor variable and the dependent variable, the New Environmental Paradigm scale. Although the beta coefficient is negative, this indicates a positive relationship between the variables due to the inverse scoring for each of the variables. Thus, if an individual scores higher on the conservative cluster items within the NAM, this individual is likely to score lower on the NEP, suggesting more support for the environment. Does this suggest that individuals are beginning to value the environment and issues associated with the environment as much as they value their family? More likely, values and attitudes associated with the environment have become more common and thus may no longer fit the profile of the conservative value cluster.

Results of the multiple regression analysis yielded the following model and model statistics in which the specific environmental problem items (treated as one scale) are the dependent variable:

y=29.373+.316(egoistic)-.302(conservative)

Table 47
Model Statistics for Hypothesis 4, SEP as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	29.373	1.460	20.118	.000	26.500	32.247
Egoistic	.316	.131	2.408	.017	.058	.574
Conservation	-.302	.116	-2.601	.010	-.531	-.074

The overall model test statistics specify an F-statistic of 4.319 with a corresponding p-value of 0.014. These test statistic results of the multiple regression model indicates the null hypothesis should be rejected at the 0.05 level, and that a linear relationship exists between the predictor and dependent variable(s). Similarly, the test results suggest that at least one of the slope coefficients is not equal to zero. Reviewing the individual slope coefficient statistics, the predictor variables, egoistic and conservation, both slope coefficients are not equal to zero. The results are as expected in this analysis for the egoistic predictor. As an individual becomes more egoistic and less concerned with the environment, individual scores will rise within the Norm

Activation Model. Further, this individual will likely become less supportive of the environment and provide higher negative scores on the Specific Environmental Problems scale.

However, for the conservation value cluster, the results are unexpected. The results of this analysis indicate that a positive relationship exists between this predictor variable and the dependent variable, the Specific Environmental Problems scale. Although the beta coefficient is negative, this indicates a positive relationship between the variables due to the inverse scoring for each of the variables. Thus, if an individual scores higher on the conservative cluster items within the NAM, this individual is likely to score lower on the Specific Environmental Problems scale, suggesting more support for the environment. The results are similar to the regression model with the NEP as the predictor. This further suggests that values and attitudes associated with the environment have either become more common, or more like family values to individuals in this study.

Hypothesis 5

To assess the relationship of the DSP constructs with an individual's attitudes toward the environment, the NEP scale and the specific environmental attitude statements scale were used as the dependent variable in multiple regression analysis. The theoretical expectation of the relationship is that the DSP constructs should negatively correlate with the environmental attitudes measurement scales.

Hypothesis 5: Respondents with higher measures on the DSP constructs (political, economic, and technological) will exhibit a statistically significant amount of lesser concern for the environment, as shown in the measures of specific and general environmental attitudes and environmental behaviors.

In the analysis for this hypothesis, the DSP constructs are based on theoretical assumptions, not results from the current data. Thus, the current measurement error present in the study remains an issue when assessing linear relationships using least squares multiple regression modeling. In the first model, the specific environmental statements are set as the

dependent variable, with the predictors being the individual DSP constructs. Listed below are the null and alternative hypotheses:

$H_o=\beta_1=\beta_2=\beta_3=0$ versus H_1: at least one $\beta \neq 0$.

Where β_1=Political, β_2=Economic and β_3=Technological

Results of the multiple regression analysis yielded the following model and model statistics:

y=32.074+.648(political)-.583(economic)-.394(technological)

Table 48
Model Statistics for Hypothesis 5, SEP as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	32.074	2.280	14.070	.000	27.587	36.561
Political	.648	.170	3.809	.000	.313	.983
Economic	-.583	.152	-3.834	.000	-.882	-.283
Technological	-.394	.141	-2.794	.006	-.672	-.117

The test statistics for the overall model indicate an F-value of 13.212 with a corresponding p-value of 0.000, indicating acceptance of the model, and that a linear relationship exists. The model presents a positive linear relationship between pro-environmental attitudes and political attitude measures within the DSP. Theoretically, a negative relationship was expected. Does this indicate that our political views are changing? Similarly, the measure of the political values within the DSP may not be representative of its original intent, implying exploratory relationships when using this cluster. Within the model, negative linear relationships are predicted for the DSP constructs, economic and technological. This implies that as a respondent's attitude becomes more pro-environmental, their attitude toward economic and technology issues should decrease. The results for the economic and technological constructs were as expected, based on theory.

The next model has the NEP scale as the dependent variable with the DSP constructs as the predictor variables. A negative linear relationship is expected for this analysis. However,

based on the results of the previous regression model, the political construct may yield a positive relationship to individuals who are pro-environmental, based on their responses to the NEP. The current measurement error present in the study remains an issue when assessing linear relationships using least squares multiple regression modeling. In this model, the NEP scale is set as the dependent variable, with the predictors being the individual DSP constructs. Listed below are the null and alternative hypotheses:

$H_o=\beta_1=\beta_2=\beta_3=0$ *versus* H_1*: at least one* $\beta \neq 0$.

Where β_1*=Political,* β_2*=Economic and* β_3*=Technological*

Results of the multiple regression analysis yielded the following model and model statistics:

y=40.482+.448(political)-.725(economic)-.453(technological)

Table 49
Model Statistics for Hypothesis 5, NEP as the Dependent Variable

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
Constant	40.482	2.322	17.433	.000	35.911	45.052
Political	.448	.173	2.588	.010	.107	.789
Economic	-.725	.155	-4.686	.000	-1.030	-.421
Technological	-.453	.144	-3.153	.002	-.736	-.170

The F-value is 14.149 with a corresponding p-value of 0.000 for the overall model in this analysis. In this case, the null hypothesis is rejected and a linear relationship between these variables is expected. Similar to the previous model for this hypothesis, the political construct has a positive linear relationship with the NEP scale. Theoretically, this was unexpected based on previous research. However, the results presented indicate that perhaps the political items have captured a different meaning than what was predicted by theory. Perhaps a more liberal political agenda has been detected within these results, suggesting greater political support for the environment across this study population.

The economic and technological constructs have a negative linear relationship to the NEP scale. This is what theory would predict. The results of this hypothesis suggest a linear relationship exists between the DSP constructs and the NEP and Specific Environmental Attitude statement scales. The expected negative relationship with the economic and technological constructs exists. However, in conflict with theory, a positive relationship exists between the political construct and the scales which measure environmental attitudes.

With the measurement issues present in the DSP scale for this study, and the results associated with the multiple regression models in this hypothesis, a question of content validity is raised regarding the items within the DSP. The results indicate a possible change in the views regarding the political outlook from these respondents. The DSP, in theory, assumes a political ideology of liberal democracy. However, the assumption does not relate to the current definition of liberal democracy. Essentially, the DSP was originally intended to measure a liberal democracy as an ideology that characterizes each individual as possessive of oneself and ultimately justifying the unlimited growth in private property and resources (MacPherson, 1962). Is it possible in this study, that the political ideology measured was misinterpreted? Or, have the political beliefs begun to change? Maybe the scale did not accurately measure the political ideology of the respondents, only the current political view.

Hypothesis Six

To examine environmental behavior, the Ecologically Conscious Consumer Behavior scale was used. To measure the behavior(s), respondents were queried on a series of statements on six different behaviors related to the environment. For each statement, each respondent was asked to strongly agree, agree, disagree, or strongly disagree with the statement. Agreement with the statement implies pro-environmental behavior, and disagreement implies that a person will behave irresponsibly when it comes to the environment. The scale measures environmental behavior on the following: recycled products, driving habits/oil dependency, biodegradability, consumer purchase, reduction in electricity, and small

wattage bulbs. Hypothesis six will examine the predictability of these behaviors based on responses to the DSP scale.

Hypothesis six will examine the predictability of the DSP constructs on environmental behaviors. To review, hypothesis six is re-stated below:

Hypothesis 6: Respondents who exhibit greater support for the constructs within the DSP will exhibit statistically significant lower levels of pro-environmental behavior as measured by the behavioral constructs within the ECCB.

To examine this hypothesis, the ECCB scale and each of its individual behavioral constructs are used as the dependent variable, with the DSP constructs being used as the predictor variables in each model. Initially, the analysis will examine the six constructs as defined by theory. Also, presented in this analysis are the resulting constructs from this analysis. These constructs are defined by the factor analysis procedures presented earlier in this chapter. In the factor analysis, four behavioral constructs were defined for this scale in this study. Essentially, the biodegradability and the recycled products combined into one factor for this analysis, along with small wattage bulbs and reduction in electricity constructs. To begin, table 50 provides the overall mean scores for the scale and the corresponding behavioral constructs.

Table 50
Mean Scores for the ECCB and the Behavioral Constructs

Scale and Construct (Theoretical)	Mean	Mean Score Needed for Pro-Environmental Behavior
Ecologically Conscious Consumer Behavior Model (29 items)	74.55	60 or below
Recycled Products (4 items)	13.37	9 or below
Driving Habits/Oil Dependency (2 items)	5.58	4 or below
Biodegradability (12 items)	30.85	26 or below
Consumer Purchase (3 items)	7.75	6 or below
Reduction in Electricity (3 items)	6.90	6 or below
Small Wattage Bulbs (4 items)	9.27	9 or below

Examination of the mean scores for the scale and the individual constructs indicates mean scores that are consistent with irresponsible environmental behavior. To exhibit pro-

environmental behavior agreement with each statement within the construct is needed. Thus, a mean score of 60 or below would be expected for the overall scale, and the mean scores necessary for pro-environmental behavior would be lower than the actual means, as indicated in Table 50. As indicated in the table, the only construct in which the mean scores are close to exhibiting pro-environmental behavior is the behavioral construct of small wattage bulbs. Therefore, behavior scores for the respondents in this study indicate irresponsible environmental behavior. Thus, for the DSP constructs, economic and technological, a negative relationship is expected between attitudes toward these concepts and consumer behavior. This suggests that as belief in these concepts grows stronger, more irresponsible environmental behavior will occur. This would support the views presented in the DSP. Based on previous results presented in this chapter, agreement with the political construct within the DSP should lead to more pro-environmental behavior. Theory does not support this statement, but previous results within this study support this assertion.

The initial regression model tested for this hypothesis has the overall ECCB scale model as the dependent variable, with the individual DSP constructs as the predictor variable. Interpretation of the results associated with each regression model is made difficult due to the measurement error and issues present in the DSP scale. Thus, the results were analyzed based on theoretical assumptions that are present with the DSP. The results for the overall ECCB scale indicate a linear relationship is present and rejection of the null hypothesis is plausible. In this model, the individual predictor variables are significant for the political construct and reasonably significant for the technological construct. The economic construct should be removed from this model, as we could not reject the null hypothesis as the beta value for this construct could equal zero. The model suggests that as values in the political construct grow stronger, that behavior will become more environmental friendly. However, for the technological

Table 51
Results of Multiple Regression Analyses for Hypothesis Six

Predictor	Beta Coefficients	SE Coefficients	T-Statistic	P-value	Lower 95% C.I.	Upper 95% C.I.
ECCB as Dependent						
Constant	65.626	7.445	8.815	.000	50.974	80.279
Political	2.040	.555	3.673	.000	.947	3.133
Economic	.085	.496	.171	.864	-.892	1.061
Technological	-1.086	.461	-2.357	.019	-1.993	-.179
Recycle						
Constant	9.726	1.718	5.660	.000	6.344	13.108
Political	.418	.128	3.264	.001	.166	.671
Economic	.186	.115	1.622	.106	-.040	.411
Technological	-.201	.106	-1.889	.060	-.410	.008
Driving Habits/Oil Dependency						
Constant	6.151	.879	6.997	.000	4.421	7.881
Political	.048	.066	.732	.465	-.081	.177
Economic	-.017	.059	-.284	.776	-.132	.099
Technological	-.096	.054	-1.766	.078	-.203	.011
Biodegradability						
Constant	24.786	3.451	7.183	.000	17.994	31.578
Political	.926	.257	3.598	.000	.419	1.433
Economic	.235	.230	1.021	.308	-.218	.687
Technological	-.479	.214	-2.244	.026	-.900	-.059
Consumer Purchase						
Constant	6.841	1.186	5.770	.000	4.507	9.174
Political	.260	.088	2.935	.004	.085	.434
Economic	-.019	.079	-.246	.806	-.175	.136
Technological	-.131	.073	-1.780	.076	-.275	.014
Reduction in Electricity						
Constant	4.482	1.017	4.406	.000	2.480	6.483
Political	.270	.076	3.559	.000	.121	.419
Economic	.117	.068	1.725	.086	-.016	.250
Technological	-.119	.063	-1.888	.060	-.243	.005
Small Wattage Bulbs						
Constant	5.045	1.486	3.396	.000	2.121	7.970
Political	.510	.111	4.601	.001	.292	.728
Economic	.075	.099	.760	.448	-.120	.270
Technological	-.100	.092	-1.083	.280	-.281	.081
Biodegradability/Recycle						
Constant	34.512	4.919	7.016	.000	24.830	44.195
Political	1.345	.367	3.664	.000	.622	2.067
Economic	.421	.328	1.283	.201	-.225	1.066
Technological	-.681	.305	-2.234	.026	-1.280	-.081
Small Wattage Bulbs/Reduction in Electricity						

Constant	9.527	2.356	4.044	.000	4.890	14.613
Political	.780	.176	4.439	.000	.434	1.126
Economic	.192	.157	1.224	.222	-.117	.501
Technological	-.218	.146	-1.498	.135	-.505	.069

construct, a negative relationship with behavior is expected. As belief in the technological construct grows stronger, environmental behavior will become more irresponsible. Based on theory, the result for the technological predictor is expected, while the results for the political predictor are unexpected, based on theory. Results from this study have indicated that the political construct would be a predictor of pro-environmental behavior.

Using recycling behavior items as the dependent variable and the DSP constructs as the predictors, the overall model produces a p-value acceptable to reject the null hypothesis. Individual construct beta values are not as convincing. The economic and technological construct beta values do not exhibit test statistic scores high enough to reject the null hypothesis, suggesting that the relationship for these values is difficult to determine. Overall, the model suggests a linear relationship with recycling behavior, but the primary predictor is the political construct. The technological and economic slope coefficients include the value of zero in the 95% confidence intervals, indicating these predictor variables may have no influence in the recycling model. This leaves the political construct as the only predictor variable with an acceptable p-value.

In the model in which driving habits/oil dependency is used as the dependent variable and the DSP constructs are used as the slope coefficients, the overall model has a p-value of 0.251, indicating rejection of the hypothesis, specific to this variable. To measure behaviors associated with this construct, two items were used in the ECCB scale. The mean values for each item suggest behavior is consistent with destructive environmental behaviors. In essence, the need or importance of using their car outweighs the need to conserve fuel. Prior to this analysis, the expected results were that as belief in the DSP constructs grew, ECCB behavior

would be more destructive toward the environment. The analysis results do not support a linear relationship between ECCB behavior and the DSP constructs.

Table 52
Regression Models for Hypothesis Six

Dependent Variable	Multiple Regression Model	F-Value	P-Value
Ecologically Conscious Consumer Behavior Scale	Y=65.626+2.040(p)+.085(e)-1.086(t)	6.942	.000*
Recycle	Y=9.726+.418(p)+.186(e)-.201(t)	6.115	.000*
Driving Habits/Oil Dependency	Y=6.151+.048(p)-.017(e)-.096(t)	1.374	.251
Biodegradability	Y=24.786+.926(p)+.235(e)-.479(t)	6.919	.000*
Consumer Purchase	Y=6.841+.260(p)-.019(e)-.131(t)	4.292	.006*
Reduction in Electricity	Y=4.482+.270(p)+.117(e)-.119(t)	6.980	.000*
Small Wattage Bulbs	Y=5.045+.510(p)+.075(e)-.100(t)	8.180	.000*
Biodegradability/Recycle	Y=34.512+1.345(p)+.421(e)-.680(t)	7.292	.000*
Small Wattage Bulbs/Reduction in Electricity	Y=9.527+.780(p)+.192(e)-.218(t)	8.484	.000*

Following this model, biodegradability was used as the dependent variable. Overall, this model supports a linear relationship between the variables with an F-value of 6.919 and a p-value of 0.000. Thus, the null hypothesis should be rejected and at least one of the slopes will not be equal to zero. Analyses of the individual predictor coefficient score(s) provide further insight into this model. The political and technological slope coefficients, based on individual test statistics for each, are not equal to zero and assume a linear relationship with the dependent variable. The political slope coefficient indicates a positive relationship with biodegradability behavior, suggesting that as belief in the political beliefs as stated in the DSP increases, ecological behavior will also increase. However, for the technological slope, increasing belief in the technological construct for the DSP will result in lesser amounts of environmental behavior as measured in the biodegradability factor of the ECCB. The results for these technological constructs are expected based on theoretical assumptions. Based on the individual slope test statistics, the economic slope could be equal to zero. Therefore, no linear relationship is expected for the economic construct.

The next model used the consumer purchase construct of the ECCB scale as the dependent variable in the multiple regression equation. Using the same predictors as present in the previous models, the overall regression model produces a test statistic of 4.292 with a p-value of 0.006. Based on these statistics, the null hypothesis would be rejected for this model. This assumes a linear relationship exists between the predictor variables and the dependent variable, consumer purchase. Essentially, the consumer purchase construct seeks to measure individual behavior in the purchase of environmentally safe products or recycled products.

Individual predictor statistics indicate the political construct as the only predictor variable to have a significant predictor relationship with the consumer purchase product. In this relationship, the expected theoretical relationship would be negative for both the technological and economic constructs. Based on results for this study, a positive relationship is expected between the political predictor variable and the consumer purchase variable in this model. In this model, the individual slope value for the political variable (0.260) indicates a positive relationship exists. Thus, it would be expected that as belief in the political values present in this study increases, consumer purchase decisions, as described in the ECCB, would become more favorable toward the environment. The economic and technological predictor variables were not significant with their individual test results. The technological predictor variable, although not statistically significant at the 0.05 alpha levels, would have been significant at the 0.10 level, suggesting that a relationship (negative) may exist between the dependent variable and this predictor variable. At the 0.10 level, the results relative to the technological construct would support the theoretical predictions associated with the DSP.

The next model analyzed uses the reduction in electricity construct as the dependent variable. The purpose of the items in this construct is to analyze individual behavior associated with reducing electricity usage based on purchasing household appliances that take less electricity in which to operate the appliance. In most cases, these appliances are more expensive to purchase, but economic savings are possible, as these appliances are used over a

long period of time. The overall model generated test statistics of an F-value of 6.98 with a corresponding p-value of 0.000. These statistics suggest the null hypothesis should be rejected and a linear relationship exists between the predictor variables, political, technological, and economic, and the dependent variable. The expected relationships with the individual predictor variables for this dependent variable vary. Further, the economic predictor is expected to be positive for this behavior, as individuals are likely to save money by purchasing these more expensive appliances over the long-term, assuming an economically astute public. For the technological predictor, a negative relationship would be expected based on DSP theory, but given the technological advances within the development of these appliances, this expected relationship is based solely on theory.

Individual predictor variable statistics suggest that only the political construct has a slope coefficient that is not equal to zero based on individual test statistics at the 0.05 alpha level. The political construct slope coefficient is estimated to be 0.270, indicating a positive relationship exists with the reduction in the electricity dependent variable. The assumption in this relationship is that as belief in the political values presented increases, increased usage in environmentally friendly appliances should be expected. The test statistics for the economic and technological slope coefficients fail to reject the null hypothesis at the 0.05 level, but at the 0.10 level, these coefficients would be significant. This suggests that a linear relationship is possible between these predictor variables and the dependent variable. However, the poor reliability results within the DSP do not allow any assumptions to be made.

The final theoretical model analyzed for this analysis used the small wattage bulbs construct as the dependent variable with the DSP constructs as the predictor variables. In this construct, individual behavior regarding the purchase of more efficient or smaller wattage light bulbs in an effort to reduce electricity used is measured. The overall model statistics with an f-value of 8.180 and a corresponding p-value of 0.000 indicate that a linear relationship exists for this model. Further, rejection of the null hypothesis will occur as the overall model statistics

indicates at least one slope coefficient is not equal to zero. The expected relationships with the individual predictor variables for this dependent variable are expected to be similar as those for the previous dependent variable, reduction in electricity. For the political and economic predictors, a positive relationship would be expected based on study results for the political construct, and theory for the economic construct. Further, the economic predictor is expected to be positive for this behavior, as individuals are likely to save money by using more efficient and smaller wattage light bulbs. For the technological predictor, a negative relationship would be expected based on DSP theory, but given the technological advances with the development of efficient light bulbs, this expected relationship is based solely on theory.

Individual predictor variable statistics suggest that only the political construct has a slope coefficient that is not equal to zero based on individual test statistics at the 0.05 alpha level. The political construct slope coefficient is estimated to be 0.510, indicating a positive relationship exists with the small wattage bulbs dependent variable. The assumption in this relationship is that as belief in the political values presented increases, increased usage in higher efficient or smaller wattage light bulbs should be expected. The test statistics for the economic and technological slope coefficients fail to reject the null hypothesis at the 0.05 level, and thus each slope coefficient could equal zero.

The remaining two multiple regression models tested in this hypothesis used the results of the factor analysis presented earlier in this chapter. Based on the factor analytic results for the ECCB, four behavioral constructs were present in this study. The two constructs that were different from theory are used as the dependent variables in this analysis. The first dependent variable used is a combination of the biodegradability and recycling constructs. A review of the analysis results suggests the overall model is acceptable based on the F-value of 7.292 and a corresponding p-value of 0.000. This strongly suggests a linear relationship is present between the DSP constructs and this behavioral cluster.

Analyses of the individual predictor coefficient score(s) provide further insight into this model. Similar to the biodegradability construct, the political and technological slope coefficients, based on individual test statistics for each, are not equal to zero, and assume a linear relationship with the dependent variable. The political slope coefficient indicates a positive relationship with the biodegradability/recycle behavior cluster, advocating that as belief in the political beliefs as stated in the DSP increases, ecological behavior will also increase. However, for the technological slope, increasing belief in the technological construct for the DSP will result in lesser amounts of environmental behavior, as measured in the biodegradability/recycling factor of the ECCB. Similar to the biodegradability construct results presented earlier, the results for these technological constructs are expected based on theoretical assumptions. Based on the individual slope test statistics, the economic slope could be equal to zero. Therefore, no linear relationship is expected for the economic construct.

The final theoretical model analyzed used the small wattage bulbs/reduction in electricity construct as the dependent variable. Again, this dependent variable is data-driven, based on the results of the factor analysis completed on the ECCB scale in this study. In this construct, individual behavior regarding the purchase of more efficient or smaller wattage light bulbs or in appliances that are more efficient in terms of electrical use, in an effort to reduce electricity used is measured. The overall model statistics with an f-value of 8.484 and a corresponding p-value of 0.000 indicate that a linear relationship exists for this model. Further, rejection of the null hypothesis will occur, as the overall model statistics indicates at least one slope coefficient is not equal to zero. The expected relationships with the individual predictor variables for this dependent variable are expected to be similar as those for the small wattage bulbs and the reduction of electricity constructs. For the political and economic predictors, a positive relationship would be expected based on study results for the political construct, and theory for the economic construct. Further, the economic predictor is expected to be positive for this behavior, as individuals are likely to save money by using more efficient and smaller wattage

light bulbs. For the technological predictor, a negative relationship would be expected based on DSP theory, but given the technological advances with the development of efficient light bulbs, the expected relationship is based solely on theory.

Individual predictor variable statistics suggest only the political construct is the slope coefficient that is not equal to zero, based on individual test statistics at the 0.05 alpha levels. These results are similar to the results presented with the small wattage bulbs behavior cluster. The political construct slope coefficient is estimated to be 0.176, indicating a positive relationship exists with the small wattage bulbs dependent variable. The assumption in this relationship is that as belief in the political values presented increases, increased usage in higher efficiency or smaller wattage light bulbs should be expected. The test statistics for the economic and technological slope coefficients reject the hypothesis at the 0.05 level, and thus each slope coefficient could equal zero.

Hypothesis Seven

Hypothesis 7: Respondents who exhibit high concern for the environment as measured by the NEP and specific measures of environmental concern and the biospheric/altruistic and openness to change value clusters, will exhibit statistically similar measures of environmental behavior as those respondents who exhibit lower levels of environmental concern and the egoistic and conservation value clusters.

The purpose of this hypothesis is to examine the behavior patterns based on individual scores across the measurement scales NEP, SEP and NAM. Using the Norm Activation Model and the individual clusters within the model to assess measures of values toward the environment, behavioral patterns based on individual values was assessed. Based on theory, individuals who agree with the concept of the biospheric/altruistic and the openness to change clusters are more likely to support the environment. Individuals who agree with the concepts presented by the egoistic and the conservation clusters are less likely to support the environment. The expected relationships of each Norm Activation Model cluster and the

environmental scales with Ecologically Conscious Consumer Behavior are expected to be similar across each cluster, regardless of individual attitudes toward the environment. DSP theory predicates that individuals make decisions based on their political, economic and technological views, not necessarily on their attitudes toward the environment or other societal issues.

To examine the relationships within this hypothesis, multiple regression models using least squares modeling techniques were used. To examine these relationships, the ECCB scale and each of its individual behavioral constructs were used as the dependent variable, with the predictor variables ranging from the environmental scales, NEP and SEP, to the individual clusters found in the Norm Activation Model. To examine the relationships described in this hypothesis, table 51 will present the mean scores for each scale and value cluster used in this analysis, along with the mean score needed for this cluster or scale to represent a pro-environmental attitude, behavior or value.

Table 53
Mean Scores for the Scales and Clusters to be used in Hypothesis Seven

Scale and Construct (Theoretical)	Mean	Mean Score Needed for Pro-Environmental Behavior, Attitude or Value
Ecologically Conscious Consumer Behavior Model (29 items)	74.55	60 or below
Recycled Products (4 items)	13.37	9 or below
Driving Habits/Oil Dependency (2 items)	5.58	4 or below
Biodegradability (12 items)	30.85	26 or below
Consumer Purchase (3 items)	7.75	6 or below
Reduction in Electricity (3 items)	6.90	6 or below
Small Wattage Bulbs (4 items)	9.27	9 or below
Specific Environmental Attitudes	28.6	29 or below
New Environmental Paradigm	33.4	34 or below
Norm Activation Model	44.6	40 or above
Biospheric/Altruistic	11.7	10 or above
Egoistic	9.6	10 or above
Openness To Change	10.5	10 or above
Conservation	12.6	10 or above

Analysis of the mean scores presented in table 53, specify for the ECCB scale and the behavioral constructs within the scale and overall mean scores indicate behavior that is inconsistent with pro-environmental behavior. Essentially, behavior across all items would not be considered pro-environmental based on the overall mean score. For each of the individual constructs, behavior would not be considered pro-environmental. The only exception(s) potentially, would be for the constructs of small wattage bulbs and the reduction in electricity cluster. Each of these mean scores is relatively close to the mean score needed to be considered to represent pro-environmental behavior. For the environmental attitude and value scales, each of these scales represent overall mean scores that would be considered pro-environmental. Further, for the individual value clusters, the overall mean scores for each cluster are representative of a pro-attitude or value toward the concept represented by each cluster or construct.

To analyze the results for the multiple regression models explored for this hypothesis, table 54 provides a visual look at the initial regression model results for the predictor variable NEP.

Table 54
Regression Model Results for the Predictor Variable NEP

Dependent Variable	Predictor Variable(s)	Regression Model	F-Value	P-Value
ECCB	NEP	Y=61.892+.379(NEP)	4.382	.037*
Recycle	NEP	Y=10.692+.080(NEP)	3.694	.056
Drive/Oil	NEP	Y=5.124+.014(NEP)	.420	.518
Biodegradability	NEP	Y=23.500+.220(NEP)	6.938	.009*
Consumer Purchase	NEP	Y=6.778+.029(NEP)	1.034	.310
Reduction in Electricity	NEP	Y=5.516+.041(NEP)	2.772	.097
Small Wattage Bulbs	NEP	Y=8.161+.033(NEP)	.824	.365
Biodegradability/Recycle	NEP	Y=34.192+.300(NEP)	6.315	.013*
Small Wattage Bulbs/Reduction in Electricity	NEP	Y=13.677+.074(NEP)	1.651	.200

To begin, respondent behavior within this survey would generally be considered to be less than environmentally friendly based on mean score responses to the ECCB scale used to

measure behavior in this study. Thus, using the attitude scales in this study to assess a linear relationship with the behavior scale should prove most interesting. Using the New Environmental Paradigm (NEP) as the predictor variable in a regression model with the ECCB scale as the dependent variable, the regression analysis indicates that a linear relationship exists at the $p = 0.05$ level. The relationship is purported to be positive, with the positive beta value, suggesting that as individual attitude toward the environment becomes more positive, environmental behavior will also become more positive, or more environmentally friendly. Further, using the NEP to predict behavior specific to each behavioral factor represented in the ECCB, the regression analyses indicates that a linear relationship exists between the NEP and the biodegradability factor at the $p = 0.05$ level. Further, since the biodegradability and recycle construct formed one factor for this study, these two factors were combined to form one factor. Used as the predictor variable, this combined factor also produced a linear relationship with the dependent variable NEP at the 0.05 level. However, for the remaining factors, recycle, drive/oil, consumer purchase, reduction in electricity and small wattage bulbs, no linear relationship exists with the NEP. In essence, the beta coefficients for the remainder of the factors may equal to zero. The biodegradability factor represents approximately one-third of the items in the ECCB scale (11 of 29 items), thus suggesting individuals are likely to behave more environmentally friendly if their attitude toward the environment is positive. Furthermore, the NEP would have had linear relationships with the recycle and reduction in electricity factors at the $p = 0.10$ level, suggesting that a possible linear relationship exists with each of these factors.

However, for the factors of drive/oil dependency, consumer purchase and small wattage bulbs, factors which measure the use and purchase of higher efficiency light bulbs, other environmentally friendly consumer products, and less use of gas/oil, no linear relationship exists. This suggests that regardless of environmental attitude, purchase or use of these products is not an environmentally conscious decision. This remains a decision controlled most likely by DSP factors, specifically technological and economic. A review of the DSP factors as

predictor variables and the ECCB as the dependent variable, finds that a linear relationship exists between these variables at the p = 0.05 level as well. This suggests that as belief in these factors increases, behavior supporting these factors will also increase. This information remains more suspect due to the measurement issues present within the DSP scale for this study. However, assuming reasonable measurement of these items, a linear relationship exists between the DSP factors and the NEP scale. This further confirms that as attitudes toward each scale increases, corresponding behavior is also likely to occur. Using the DSP factors to predict specific behaviors associated with the individual factors, produced linear relationships with all of the specific behaviors except drive/oil dependency (results are presented in Table 49, associated with hypothesis six).

Additionally, the Specific Environmental Problem items scale was used as the predictor variable in a regression model in which the ECCB scale is the dependent variable. Also, the Specific Environmental Problems items scale was also used as a predictor for each of the behavioral factors represented in the ECCB. Table 55 provides a visual look at the results for these analyses.

Analyzing these results indicates that using the Specific Environmental Problems as the predictor variable creates a linear relationship with the ECCB scale as a whole, and with most of the individual behavioral factors within the scale. Only the consumer purchase and drive/oil dependency factors are not significant at the p = 0.05 level for linearity. Each of these factors represents the fewest items within the scale, drive/oil dependency, two items, and consumer purchase, 3 items. Drive/oil dependency would have supported the linear relationship at the p = 0.10 level, which suggests that a linear relationship may exist if the sample size were larger or if more variables had been used to measure this behavioral construct. The suspected relationship for the drive/oil dependency is positive, advocating that as more concern for this environmental issue grows, more pro-environmental behavior will occur.

Table 55
Regression Model Results for the Predictor Variable SEP

Dependent Variable	Predictor Variable(s)	Regression Model	F-Value	P-Value
ECCB	Specific Environmental Problems (SEP)	Y=57.878+.583(SEP)	10.113	.002*
Recycle	Specific Environmental Problems (SEP)	Y=10.456+.102	5.750	.017*
Drive/Oil	Specific Environmental Problems (SEP)	Y=4.455+.039	3.396	.066
Biodegradability	Specific Environmental Problems (SEP)	Y=22.279+.300	12.547	.000*
Consumer Purchase	Specific Environmental Problems (SEP)	Y=6.854+.031	1.147	.285
Reduction in Electricity	Specific Environmental Problems (SEP)	Y=4.883+.070	7.883	.005*
Small Wattage Bulbs	Specific Environmental Problems (SEP)	Y=6.818+.086	5.335	.022*
Biodegradability/Recycle	Specific Environmental Problems (SEP)	Y=32.734+.402	10.982	.001*
Small Wattage Bulbs/Reduction in Electricity	Specific Environmental Problems (SEP)	Y=11.702+.156	7.060	.008*

For the ECCB scale as a whole, and the individual behavioral factors of biodegradability, recycling, reduction in electricity, small wattage bulbs, and the factors consistent with this study, biodegradability/recycling and small wattage bulbs/reduction in electricity, a linear relationship exists among these dependent variables and the predictor variable, Specific Environmental Problems. For each case in which a linear relationship is present, a positive association is expected. Thus, as support for these Specific Environmental Problems increase, behavior to support these problems is expected to be more pro-environmental in support of these issues. This is consistent with theory, in that the attitude/behavior relationship is more predictable when the attitudinal variables are more specific.

To assess the association of the Norm Activation Model and the constructs within the NAM with the ECCB and its behavioral constructs, multiple regression models were constructed in which the ECCB and each of its behavioral constructs, theory and data-oriented (based on this study) were used as dependent variables. The predictor variables were either the Norm Activation Model as a whole, or the Biospheric/Altruistic and Openness to Change constructs or the Egoistic and Conservation constructs. In theory, the biospheric/altruistic and openness to change constructs should represent individuals who are environmentally supportive and individuals who have similar values, relative to the environment. Further, the egoistic and conservation constructs should represent individuals who are less environmentally supportive, but represent similar value types as it relates to environmental issues. Similar to previous analyses with the Norm Activation Model and its constructs, the scoring of the items for the NAM means the interpretation of the regression model results will not be as they appear. For example, a positive relationship indicated by the regression model will actually suggest a negative relationship within the model, because of the scoring differences for the behavioral scale (ECCB) and the Norm Activation Model scale.

Based on the hypothesis that is being analyzed, no differences in behavioral relationships is expected between the biospheric/altruistic and openness to change predictor regression models and the egoistic and conservation predictor regression models. Initial analysis of the results in table 56 finds that only one linear relationship exists in which value orientations are used to predict environmental behavior. In this relationship, recycling is the behavioral construct, dependent variable, and the predictor variables are the egoistic and conservation value orientations. Based on the p-value, this relationship is linear at the 0.05 level and the following associations were examined. For the egoistic value orientation a negative association should be expected, in that as egoistic values rise, recycling behavior should decline. Reviewing the individual predictor statistics indicates the egoistic value cluster as the

only predictor in which the slope is not equal to zero. Thus, no linear relationship with the conservative cluster exists.

Table 56
Regression Model Results, Predictor Variables Associated with the NAM

Dependent Variable	Predictor Variable(s)	Regression Model	F-Value	P-Value
ECCB	Norm Activation Model (NAM)	Y=76.473-.043(NAM)	.142	.707
ECCB	Biospheric/Altruistic Openness To Change	Y=84.012-.390(BA)-.463(OC)	2.181	.115
ECCB	Egoistic Conservation	Y=68.946+.493(E)+.068(C)	1.016	.363
Recycle	Biospheric/Altruistic Openness to Change	Y=14.140+.004(BA)-.078(OC)	.421	.657
Recycle	Egoistic Conservation	Y=11.036+.292(E)-.039(C)	5.283	.006*
Drive/Oil	Biospheric/Altruistic Openness to Change	Y=5.845+.006(BA)-.032(OC)	.264	.768
Drive/Oil	Egoistic Conservation	Y=5.368-.023(E)+.034(C)	.331	.718
Biodegradability	Biospheric/Altruistic Openness to Change	Y=35.479-.214(BA)-.201(OC)	2.441	.089
Biodegradability	Egoistic Conservation	Y=28.472+.281(E)-.026(C)	1.206	.301
Consumer Purchase	Biospheric/Altruistic Openness to Change	Y=8.693-.112(BA)+.020(OC)	1.733	.179
Consumer Purchase	Egoistic Conservation	Y=6.996+.035(E)+.033(C)	.551	.557
Reduction in Electricity	Biospheric/Altruistic Openness to Change	Y=8.082-.085(BA)-.018(OC)	2.219	.111
Reduction in Electricity	Egoistic Conservation	Y=6.533+.104(E)-.051(C)	1.672	.190
Small Wattage Bulbs	Biospheric/Altruistic Openness to Change	Y=11.444-.093(BA)-.102(OC)	2.870	.058
Small Wattage Bulbs	Egoistic Conservation	Y=9.032+.111(E)-.066(C)	.916	.401
Biodegradability/Recycle	Biospheric/Altruistic Openness to Change	Y=49.619-.210(BA)-.279(OC)	1.620	.200
Biodegradability/Recycle	Egoistic Conservation	Y=39.508+.573(E)-.064(C)	2.441	.089
Small Wattage Bulbs/Reduction in Electricity	Biospheric/Altruistic Openness to Change	Y=19.526-.179(BA)-.120(OC)	2.793	.063
Small Wattage Bulbs/Reduction in Electricity	Egoistic Conservation	Y=15.565+.215(E)-.117(C)	1.333	.265

The remaining relationships tested through multiple regression analyses indicate the rejection of the individual hypotheses for each relationship and thus a linear relationship does not exist. This is consistent across each of the remaining regression models tested in which the Norm Activation Model and the value orientations associated with this model are used as predictors. This is consistent with the hypothesis that no differences would exist in the value/behavioral relationships within this study. Further, the associations between the behavioral constructs and the environmental attitude assessment instruments produced similar results, suggesting consistency in these measures. Likewise, the more specific the attitude measurement, the more linear the associations were with the behavioral orientations. This could be found to be consistent for hypothesis six, which assessed the behavior/attitude relationship in which the DSP was used as the attitude measure.

The best predictors of environmental behaviors were the DSP scale and the SEP scale, each assessing individual attitudes toward the environment in specific statements. Consistent with the theory underlying each scale, the relationships were as expected, except for the political construct within the DSP. Further, the economic construct within the DSP had no significant association with any of the behavioral constructs. However, the technological construct produced, as expected, negative associations with environmental behavior. Based on the regression analyses, measurement of the political and economic statements within the DSP appears to be skewed, and has thus created a measurement error within this scale. However, the predictive relationships associated with the political and technological constructs from this scale appear to be consistent across all behavioral clusters. The SEP scale was an excellent predictor of environmental behavior. In essence, as the values of the SEP increased, pro-environmental behavior increased.

Summary of Results

In summary, the descriptive results illustrate a paradox to support the notion of the paradigm crisis noted by Kilbourne et. al, (2002). Descriptively, the results indicate support for

the environment and environmental issues. Paradoxically, environmental behavior results do not support environmentally responsible behavior. Essentially, the result of this study population indicates a population who largely support the environment attitudinally, but behaviorally responds irresponsibly. The sample population is representative of a traditional small private college in the eastern portion of the United States.

The predictive results imply the DSP is the best overall predictor of consumer behavior. The predictive results imply as belief in technology increases within the DSP, environmentally responsible behavior will decline. Further supporting the idea of the DSP paradigm in a crisis state are the predictive results of the political construct. The political construct predictive results imply that as belief in the political system increases, environmentally responsible behavior will increase. This further supports the notion of Kilbourne et. al regarding the paradigm crisis between belief in the DSP and the NEP. Similarly, the economic construct produced mixed predictive results relative to behavior. The results of the economic construct produced differing positive or negative relationships with behavior, indicating complications within the predictive data.

Further complicating the results when using the DSP is the internal reliability measures associated with the DSP scale. These measures suggest serious problems exist with the measurement of the data within this scale. The measurement issues appear to be limited to the political and economic constructs. The technological construct produced an adequate internal reliability score when compared to the political and economic sections. Yet, with two of three sections of this scale producing very low internal reliability scores, the need for major revisions of the current scale or use of a longer version of the scale is needed.

Prior research using attitudes to predict consumer environmental behavior suggested attitudes toward specific environmental issues were better predictors of behavior when compared to general environmental attitudes (Ewing, 2001). Results of the predictive equations when using the SEP and the NEP to predict consumer behavior provide further support for this

research. In fact, the predictive abilities of the SEP were similar to the DSP. The difference between the DSP and the SEP was the predictive relationship associated with the consumer purchase behavioral construct. When predicting consumer purchase behavior, the DSP produced a significant linear relationship, indicating as belief in the DSP became stronger; consumer purchase decisions were more likely to be environmentally irresponsible. The SEP did not produce a significant linear relationship with the consumer purchase behavioral construct.

Lastly, the relationship of values and attitudes were assessed using a predictive linear model. In these models using the biospheric/altruistic and openness to change value orientations as predictors of environmental attitudes and then applying the egoistic and conservation value orientations as predictors toward environmental attitudes, significant linear relationships were attained for each model tested. The most surprising result in these models could be found in the model using the egoistic orientations. In each case, the egoistic orientation resulted in a positive relationship with environmental attitudes. This was not expected based on theory. This suggests as a belief in individual egos becomes stronger, attitudes toward the environment also became stronger. In contrast, theory would posit as egos become stronger belief in DSP beliefs increase. The results further support a paradigmatic crisis as individual egos become more supportive of the environment attitudinally. Similar to the egoistic support of recycling, perhaps the results indicate that support for the environment is important to the individual ego, at least on the attitudinal level.

CHAPTER 5

CONCLUSIONS AND RECOMENDATIONS

The overall purpose of this chapter is to present the conclusions derived from the study results and to provide recommendations for further research. To summarize, the study results indicate a study population with pro-environmental attitudes and non-environmental friendly consumer behavior. Further, the Dominant Social Paradigm demonstrated the most significant prediction models toward consumer behavior and the behavioral constructs. Also, the more specific attitudes, SEP, proved to be better predictors of behavior when compared to the general environmental attitude measure provided by the NEP. Lastly, the NAM value orientations were adequate predictors of environmental attitudes, but show no predictive relationship with consumer behavior. Two unexpected results indicate involve the political construct within the DSP and the egoistic orientation within the NAM. The relationship of each construct in the results suggests growing belief the political system is beginning to support the environment. Further, relationships relative the egoistic orientation and the prediction of environmental attitudes suggest individual egos are supportive of pro-environmental attitudes and potentially behaviors.

Prior to the study, the theoretical assumptions underlying the study suggested as individuals believed more in the principles of the DSP, behavior would be more environmentally harmful. Further, as belief in the principles of the NEP increased, behavior was likely to be more environmentally favorable. At the crux of the theoretical assumptions are the individuals who have growing attitudinal and value support for the environment as evidenced by responses to the NEP, SEP and the NAM, and yet continue to behave in a manner environmentally harmful. In essence, does belief in the DSP influence the environmental behavior patterns within our society? To assess this question, the conclusions are presented relative to each hypothesis and

then capsized overall based on the results. In the following, the scale development concerns and limitations as well as recommendations for future studies are addressed based on the findings and measurement issues within this study.

The primary purpose of this study was to investigate, propose and test a multi-level model which incorporates the DSP principles in the prediction of environmentally friendly behavior. In association with this purpose is the influence of the DSP in the prediction equations using environmental concern or positive values toward the environment in the prediction of pro-environmental behavior. The proposed model begins with the constructs of the DSP, not the attitudes or values represented within the NEP or the NAM as the predictors of benign environmental behavior. In essence, environmentally friendly behavior begins with attitudes friendly toward the environment. However, does having an environmentally friendly attitude suggest environmentally friendly behavior will occur? The assumption and argument made in this study is no. The argument in this study is the DSP will be a better predictor of environmentally friendly or non-friendly behavior, and will influence individuals whose attitude or values are measured as pro-environmental.

Initial conclusions indicate the sample tends to be sensitive toward the environment, but behaviorally, not environmentally friendly. For example, for the ECCB, neither of the mean scores, overall or individual constructs, suggests behavior is pro-environmental. Yet, the measurement indices of the NEP, SEP and NAM each supported the pro-environmental stance with the individual mean scores for each scale and the scales' respective constructs.

Further, the measurement indices of the attitudinal and value scales indicate good reliability for all scales, with the exception of the DSP. The DSP reliability index is very suspect for this study, and thus creates some questions when using this scale for further analysis. Despite the index, the scale was used for further analysis using the theoretical assumptions of the scale. The NEP, NAM, SEP, and ECCB scales all had good reliability indices within the data, and thus few measurement issues were present when using these scales for further

analyses. Additionally, the reliability indices of these scales compared favorably with previous use.

Results of the NEP scale analysis revealed a two-factor solution was best for the data. The revised NEP scale was used in this study. Dunlap et al. (2000) suggested this scale may have as many as five factors. The analysis results when comparing a four-, five-, one- or two-factor model, suggests for this data a two-factor solution provides the best fit, with a one-factor solution providing adequate fit. The one-factor solution provides an excellent fit if the one item, the earth has plenty of natural resources if we just learn how to develop them, is considered. A one-factor solution would support theoretical assumptions the NEP is representative of a new worldview. The results, however, imply a different view.

Closer examination of the two-factor model insinuates the two factors being measured are anti-anthropocentric and eco-crisis. The anti-anthropocentric items may be viewed as representative of DSP items, as the items imply human dominance/ignorance towards nature. The theory underlying the NEP indicates these items to be anti-anthropocentric. However, DSP influence could lead individuals to view these items as anthropocentric or supportive of human dominance, depending on how these items may be viewed as stand alone items.

Each of the scale reliabilities, with the exception of the DSP, was adequate to very good relative to internal consistency. The two highest internal consistency scores were for the NAM and the ECCB. Each of these scales was measured as separate scales in different sections of the survey instrument. The NEP, DSP, and the SEP were measured in the same section with items from each instrument scattered and mixed together. Basically, continuity of each scale was compromised. How this may have affected the data results is difficult to determine at this time. However, it is likely to have affected the internal consistency scores within each scale, although adequate reliability scores were received for the NEP and the SEP.

The best “fit” confirmatory factor analysis model for the ECCB scale was a four-factor solution featuring the following four constructs; biodegradability/recycled products, small

wattage blubs/reduction in electricity, driving habits/oil dependency, and consumer purchase. Deviating from the theoretical solution of six factors, four of the constructs molded into two distinct constructs. The constructs formed biodegradability/recycled products and small wattage blubs/reduction in electricity, and this was not unexpected, as each of these constructs were correlated in both measurement and content. Further, clear distinct differences in these concepts within society are generally unclear and thus, correlation among these constructs was expected.

The SEP scale is really a list of specific environmental issues treated as a scale for this study. Reliability and factor analysis results confirmed adequate measurement characteristics within the scale. An exploratory factor analysis procedure indicated a one-factor solution was the best model fit for this scale. In theory, the scale may be further developed for future use with more concepts. Thus, the conclusions for the study are based on the following measurement issues:

1. The DSP scale used may, or may not have measured the theoretical constructs the scale is supposed to measure.
2. The NEP, NAM, ECCB and the SEP scales have good reliability coefficients, and thus have been determined to have measured their representative constructs.
3. The NEP, NAM and ECCB produced similar factor analytic results to previous research.
4. Predictive analyses using the DSP were based on the assumption the DSP constructs were theoretically sound, if not measurement reliable.

Limitations of the study include the constraints resulting from the measurement error within the DSP. The measurement concerns within the DSP elicit questions as to the conclusions resulting from use of the DSP in the multiple regression equations. However, substantive use of the DSP is necessary to assess the overall purpose of this study. The

primary concern regarding the measurement issues surrounding the DSP is the reliability of the scale. In essence, did the scale items accurately measure the concept as theory would dictate? Using the reliability coefficients to determine the answer would likely be negative. However, previous use of the scale in a sixteen-item form, suggests adequate internal reliability. Kilbourne et al. (2002) used the shortened version with limited reliability success, but continued to promote the use of the shortened version in future studies. Thus, the shortened version was chosen. Future studies should include the longer sixteen-item version for greater reliability.

Other limitations include a sample primarily limited to individuals who are from the eastern part of North Carolina. Otherwise, the study participants can be assumed to be normal college students, representative of other college students at a small private college within the U.S.A. The use of the student sample is consistent with previous studies which seek to ascertain the influence of the DSP on environmental attitudes (Kilbourne et al., 2002). An additional limitation is a larger sample should be used to increase the precision of the estimates. In this study the sample size is adequate, given the sample was drawn from a small college setting with a total student population of approximately 750-1,000 at the campus location.

A Review of Hypotheses Results

Hypotheses one and two

To review, hypothesis one and two assessed the linear relationship of the DSP and the Norm Activation Model and its constructs. Theoretically, the relationship of the constructs represented by each scale will differ depending on the construct. However, the possibility is the constructs in these scales do not have a relationship, thus the hypothesis is rejected. These scales should associate in theory somewhat, but a linear relationship is not necessarily expected. The results of the hypotheses one and two further support the notion the DSP and the NAM are not linearly related. In fact, within the multiple regression results, belief in the DSP principles was used as the predictor variables, and no relationship was detected toward any of

the NAM constructs. The results may have been affected by the measurement error present within the DSP scale; however, a non-linear relationship here was not completely unexpected.

Hypothesis three

Results from the multiple regression analyses in hypothesis three indicate a linear relationship exists between the NAM constructs of biospheric/altruistic and openness to change and the NEP. In particular, the result is linear with the biospheric/altruistic construct, indicating as positive values toward biospheric/altruism increase, the more positive attitudes toward the environment, as measured by the NEP and the SEP, should be expected. Theoretically, this is the expected result. The results within the openness to change construct should be similar. However, the results indicate this construct does not produce a linear relationship with the NEP or the SEP. The openness to change cluster implies individuals are willing to change their attitudes and values toward the environment. It is possible the lack of significance in these results stems from the fact individual attitudes toward the environment is already positive.

Hypothesis four

Supportive of this notion are the results from hypothesis four. In this hypothesis, the linearity of the egoistic and conservative clusters of the NAM was assessed as it relates to the NEP and the SEP. In theory, a negative linear relationship was expected for these two clusters in this model. In accordance with theory, the results indicate a negative relationship with the egoistic cluster. The implication is as individuals become more concerned with themselves, they become less concerned with the environment. However, for the conservative cluster, the results were not in accordance with theory. The conservative cluster is supposed to measure individuals' unwillingness to change and the need to maintain core values. Core values in this case would be those assumed to be measured by the DSP. The results indicate a positive linear relationship with the NEP and the SEP, thus implying as belief in the conservative values increased, positive attitudes toward the environment increased, at least within this study. This is unexpected according to theory. Further, this provides some explanation of the rejection of the

null hypothesis for the openness to change value cluster. Perhaps the core values of individuals in this study include positive attitudes and values toward the environment. Given the age of the sample, mostly young adults, the core values of this group may be more supportive of the ecologically sound issues.

Hypothesis five

The results of the multiple regression models tested in hypothesis five indicate the DSP is linearly related to the NEP and the SEP measurement instruments. The linear relationship was expected based on theory, and the relationship was expected to be negative for each of the constructs in the DSP. For each of the models, a significant model fit was established for each of the dependent variables; DSP constructs. As suggested by theory, a negative linear fit was confirmed for the economic and technological constructs of the DSP. However, a positive linear fit was detected for the political construct, and this was unexpected theoretically. The expected relationships were as belief in the DSP increased, attitudinal support for the environment would decrease. The positive relationship for the political construct suggests as beliefs in the political system increase, so will attitudinal support for the environment. The likelihood measurement error exists within the political system construct is very good, as the reliability score for this construct was very low. Yet, this could signal individuals or consumers are beginning to believe the political system has a positive attitude toward the environment.

Hypothesis six

The results of hypothesis six examine the predictive relationship of the DSP on behavior, as recorded using the ECCB scale. The descriptive results of the behavior scale imply the sample behaves in a manner is unfriendly toward the environment. Implications of the descriptive results suggest the DSP will be more predictive of overall behavior, as support for DSP principles implies less friendly environmental behavior. In fact, the multiple regression equations in which the DSP principles were used as predictors of overall behavior produced a linear relationship in the prediction of behavior as measured by the ECCB. Further, linear

relationships were measured in the prediction of behavior for each of the behavioral constructs within the ECCB, with the exception of the driving habits/oil dependency construct. In this construct, only two items were used to measure behavior on driving habits/oil dependency, and the error present in the measurement of DSP principles, the lack of a significant linear relationship, is not unexpected.

The resulting significant linear relationships with the remaining behavioral constructs suggests the DSP principles provide adequate predictors of the behavior exhibited by this sample. Consistent across each predictive relationship was the relationship with the political principle of the DSP. In theory, the expected relationship is as belief in the political principle increased, behavior toward the environment would become less friendly, or more status quo oriented. However, for each of the behavioral constructs, not including driving habits/oil production, the political principle produced, significantly, the following relationship; as belief in the political principle became stronger, behavior toward the environment became more positive or environmentally friendly. Tempering this result is the reliability coefficient for the political principle and the DSP scale. However, if these results could be duplicated in further research, it would suggest a stronger belief in our political system could lead to more environmentally sound behaviors. Perhaps what is being measured in this study is the recognition by this sample our political system accepts environmentally friendly behavior as being important to our future?

Results for the economic and technological principles varied across each of the predictive models. Consistent was the negative relationships exhibited with the technological principle. Although the predictive relationship for this principle was not significant for all behavioral constructs, the negative association was consistent in each model. The negative association implies as belief in the technological principle grows, the more unfriendly environmental behavior will occur. This supports DSP theory technology can be used to solve environmental problems. Further, this supports the belief despite our behavior; some technology will be developed to repair any problem this behavior may cause. Results for this DSP principle

are likely to be the most sound, as this principle produced the highest reliability coefficient among the principles at 0.530. This alpha value is not high, but when compared with the results of the political and economic construct, this alpha value is high.

The economic principle produced mixed results in both significance and direction. Based on the alpha value for the economic principle, the lowest of the three DSP constructs and the lack of statistical significance in the prediction equations for behavior, serious questions exist as to whether the economic factor was truly measured in this study. However, within the behavioral construct (small wattage bulbs) the positive relationship existed within the model followed theoretical assumptions. This suggests as belief in the economic principle grows, the more environmentally friendly behavior will occur in this behavioral construct. This suggests the respondents in this sample were economically astute, as purchase of environmentally friendly light bulbs, although more expensive at the time of purchase, is the more economically and environmentally sound decision, as these bulbs will last longer and are more environmentally efficient.

Hypothesis seven

Hypothesis seven examined the predictive qualities of the NEP, SEP and the NAM with the behavior reported in the ECCB. Theoretical assumptions would suggest as belief in the measurement principles within the NEP or SEP increase, pro-environmental behavior will also increase. Overall, the predictive qualities of the NEP were significant in predicting behavior when using the behavior as measured across the full ECCB scale. Further, the predictive relationship of the NEP was significant in predicting the biodegradability behavior at the 0.05 level. Further, for the recycling behavioral construct, the linear relationship was very close to being accepted at the 0.05 level. More items to measure recycling behavior, or perhaps a larger sample, would have produced a significant linear relationship with this construct. The results for the biodegradability and the recycling constructs are similar due to the similar nature of the constructs. For the remaining behavioral constructs, no linear predictive relationships were

measured. Based on the responses in the dataset, this was not unexpected. This further supports the model presented in Figure 1. The model presented suggested the DSP provided a direct effect or prediction on individual behavior, and the DSP could moderate the effect of the belief in the NEP or SEP in the prediction of environmental behavior. For the NEP, the moderating effect of the DSP principles appears likely with most of the individual behavior constructs. Based on previous research, which suggests general environmental attitudes are only reasonable predictors of pro-environmental behavior, this data would support the supposition.

The SEP overall provided more consistent predictive results when compared with the NEP. Theoretically, this would be expected, as previous research findings have suggested specific attitudes are often better predictors of behavior than a measure of general attitudes. The results indicate the SEP has a linear relationship with the ECCB scale overall, and with the following ECCB constructs; recycle, biodegradability, reduction in electricity and small wattage bulbs. For each, the predictive relationship was positive, indicating as beliefs about a specific environmental attitude became stronger, and then the more environmentally friendly individual behavior would become. The SEP did not provide a significant predictive linear result with consumer purchase decisions, or with the driving habits/oil reduction construct. However, at the 0.10 level, this scale would have produced the only linear relationship with the driving habits/oil dependency construct within the study. This provides some evidence of concern for the use of oil, and as our attitudes toward this particular issue increase, our use and concern for oil reduction might also increase. Of further interest in these results is the acceptance of the null relationship with the consumer purchase decisions. The consumer purchase decisions within the behavior scale generally focused on the purchase of large environmentally friendly items, or items with significant cost. The failure to reject the null hypothesis suggests the presence of an economic factor in the decision to purchase larger, more expensive environmentally friendly items. Is this the effect of the DSP in the predictive relationship of the SEP? In fact, the DSP

produces the only significant predictive relationship with the consumer purchase decisions construct within the study. The results suggest a negative predictive relationship relative to the economic and technological principles of the DSP with this construct. This is expected based on theory and based on the model presented.

Using the Norm Activation Model as a predictor of behavior, only one significant linear model was produced. The egoistic and conservation value orientations provided a significant linear relationship to recycling behavior. The theoretical expectations were as values for the egoistic and conservation orientation increased, pro-environmental behavior would decrease. The results of the analysis did not support the theoretical assumption of the egoistic orientation. The explanation for this result may lie in the individuals' egos themselves. Recycling has become a norm with the passing of laws requiring recycling, or the pressure from society toward norms to recycle. Thus, egoistic individuals may recycle due to this pressure from society and the law (Ewing, 2001). The additional results actually support the model presented, in no difference is expected between the behavior prediction patterns of the differing value orientations measured.

The results provide support for the model presented in Figure 1. Initially, support is provided through the descriptive results. Review of the scale means with the individual construct there is an indication of pro-environmental attitudes, specific and general, values supportive of the environment, and behavior is not environmentally friendly. Support for the DSP principles is mixed, as support for the technological principle appears high descriptively, with support for the economic and political principles mixed. Evidence of the poor measurement quality for the DSP is present within the descriptive results, and further confirmed in the reliability and the confirmatory factor analysis procedures. The poor reliability numbers associated with the DSP have created difficulty in the interpretation process associated with the DSP.

Overall, conclusions from the study include a reasonable model fit with the data. The model proposed in Figure 1 is justified by data results. This model requires more work, however.

For example, the data support the proposed model, but has faulty data been used for this support? The data provide evidence the DSP is the most accurate predictor, linearly, of consumer behavior as measured by the ECCB. Further, the specific environmental items are an adequate predictor of consumer behavior, as measured. This supports previous theory regarding specific attitude issues as better predictors of outcomes or behaviors. However, general attitudes toward the environment, using the NEP as the predictor variable, did not produce the linear relationships expected.

The overall purpose for proposing the model assumes the paradigm of the DSP precedes the subordinate levels of thought such as attitudes, values and beliefs. Thus, the prediction of behavior is guided by the paradigm of the DSP, and not by attitudes or values. Results from this dataset support the paradigm level of prediction regarding consumer behavior. Further, the influence of the DSP in the prediction of behavior using attitudes and values appears evident within the results. Descriptively, with the attitudes and values supporting a pro-environmental stance, and behavior supporting a non-environmentally friendly position, initial results offer immediate support for the model presented in Figure 1. Analytically, the DSP and its constructs produced significant predictive linear relationships with the behavior concepts measured. In fact, the significant predictions were evident for each concept, with the exception of the drive/oil behavior construct.

Supportive of the model presented is the direction in which the predictive relationships were observed. For the DSP, the observed direction for the linear relationship was expected to be negative for each DSP principle. Two of the three principles produced the negative linear relationship. A negative relationship with the behavior scale, ECCB, assumes as beliefs in the DSP grow, behavior will become less environmentally friendly; a negative association based on the measurement indices within each scale. In the analysis using the DSP, the principles of technology and economy produced negative relationships with each ECCB construct. The

political principle produced the unexpected result of a positive association with ECCB measured behavior.

Overall, the linear associations of the DSP principles support the model presented. Measurement issues will surround the results of the analyses using the DSP due to the uncertainty of the scale representing the DSP. However, the results support the original theory underlying the model. Underlying theory for the model insinuates a negative relationship with the DSP, and assumes a negative relationship with each of the DSP principles. The measurement error in the DSP likely provided the error necessary to explain the unexpected result relative to the political principle. The results may also be indicative of a change in the political beliefs. Do individuals think the political system is becoming more supportive of the environment, or are the results of this study filled with error? More work is needed to determine this. Simply, the individual items representing this principle may be misunderstood, and more clarity is needed within the items. Despite the measurement issues, the results do support the expected predictive relationship of the DSP toward environmental behavior.

The model further suggested potential relationships between the DSP and environment attitudes and values. These associations were expected to be negative. However, these relationships were untested before this study. The expectation prior to analysis was the DSP is likely to influence the results within each scale. Initial analytic results indicate no linear relationship exists between the DSP and the NAM. In fact, multiple regression models designed to assess the predictive relationship of the DSP constructs toward the NAM and its clusters were analyzed. The results indicate no significant linear model relationships between the DSP and the NAM, or its value clusters. The value clusters were expected to produce differing associations with the DSP constructs; negative relationships with the biospheric/altruistic and openness to change value orientations, and positive relationships with the egoistic and conservative value orientations.

Further analyses revealed a significant linear relationship between the NEP and SEP in predicting the value orientations of the NAM. Although analyses of these predictive relationships were not required, the significance of these relationships suggests attitudes and values toward the environment are uniquely associated. A significant linear relationship between the NEP and the NAM value clusters of biospheric/altruistic, egoistic and conservative were observed. Results confirmed theoretical assumptions within these models. In essence, the results confirm as environmental attitudes grow more positive, belief in the biospheric/altruistic values will increase, and individuals will be less focused on themselves (egoistic). However, the relationship with conservative values was expected to be negative. Surprisingly, this result was positive, suggesting as pro-environmental attitudes grow, the value of preserving the status quo becomes more important. Intuitively, this contradicts theory, and thus explains the non-significant relationship observed with the openness to change value cluster.

Results for the SEP scale were an exact replica of the NEP prediction models. This further confirms an intuitively different approach to the environmental problem. This suggests individuals are attitudinally supportive of the environment and willing to be altruistic toward the environment. However, reluctance toward policy changes or radical changes toward behavior is rejected, as individuals prefer to maintain the status quo. The prediction models using the NEP or the SEP as a predictor variable significantly predicts a positive relationship with the conservation orientation, in as much as the attitudes for the NEP and SEP become more pro-environmental, maintaining the status quo also becomes more important. Does this suggest a reluctance to change behavior, or uncertainty as to what policy and behavioral changes are needed?

The predictive qualities of the DSP when predicting attitudes toward the environment were assessed per model specifications. When predicting attitudes toward the environment using the DSP as the predictor, significant linear relationships were present for the predictive models in which the NEP and the SEP were used as the dependent variables. Similar to the

behavior prediction models, negative associations were observed between the economic and technological constructs of the DSP and a positive relationship was observed with the political construct. The negative associations were expected based on theory. However, the continued positive linear relationships observed with the political construct provide more support belief in the current political system does not hamper attitudinal support for environmental issues.

Predictive relationships between the value and attitudinal scales on environmental behavior were also expected. A review of the results finds no predictable relationships when using the NAM scale as a predictor toward behavior. When using the NAM or the individual value orientations as predictors toward behavior, only one linear relationship was found to be significant. The use of the egoistic and conservative value orientations as predictor variables toward recycling behavior produced the significant relationship. Previous research has shown the egoistic value orientation to be a predictor of recycling behavior (Stern, Dietz & Guagnano, 1998). However, the use of the NAM as a predictive instrument toward behavior was largely unsuccessful. Based on the results, model 1 should be modified, with the removal of the line indicating a predictive association between values and consumer behavior.

Using the attitude scales to predict behavior yielded results similar to previous research. The general attitude scale, NEP, produced a general predictive model with behavior. For example, using the NEP scale to predict general environmental behavior across the ECCB scale was significant. However, when predicting the specific behavioral constructs in the ECCB, the NEP was not effective. Based on previous research, general attitudes predict general behavior, and specific attitudes predict specific behavior (Ajzen & Fishbein, 1980). Similarly, the SEP produced significant relationships with the overall ECCB scale and with four of the six behavioral constructs. In essence, the more specific the attitude measure, the better the predictability of specific environmental behavior.

In summary, a revised model demonstrating the predictive results has been constructed in Figure 3. The figure provides a visual look at the results in comparison to the original model

(see figure 1). Key findings indicate the DSP to be a better predictor of consumer behavior than attitudes or values. In contrast, the specific attitude measure explains behavior in a most sufficient manner as well. The overall supposition of the study suggested a paradigmatic change was occurring from DSP thought, to NEP philosophy. The results do not support a paradigmatic shift. However, the DSP may be in a state of "crisis" as defined by Kuhn (1962). The results support pro-environmental attitudes and values, but support for pro-environmental behavior is not evident. A paradigm is purported to guide behavior, values, attitudes and beliefs, and each should be in accordance with a specific paradigm. A state of crisis would assume disagreement between behavior and attitudes and values is occurring. The results would support this notion, although much more research is needed.

Scale Development Concerns and Limitations

To evaluate the model presented in Figure 1, a multitude of measurement concerns were under consideration during survey development, data collection and data analysis. Use of five measurement scales in conjunction, along with the length of the survey, became issues were addressed in the survey development stage. Further, the DSP measures different philosophical thought as opposed to the NEP, NAM and SEP. Thus, to use each of these scales together within a survey on individuals is an advancement of theory. Kilbourne et al. (2001, 2002) used the NEP and SEP in conjunction with the DSP to assess willingness to change overall behavior. Yet, the value portion of this study has not been replicated at the time of this writing. Further, the actual behavioral assessment in opposition to willingness to change advanced the theoretical assumptions of Kilbourne.

A review of the internal consistency measures from previous studies (see Table 57) indicates comparable reliability indices to previous research studies. The previous reliabilities were taken from the studies in which the scales were taken for the survey. For the NAM, ECCB

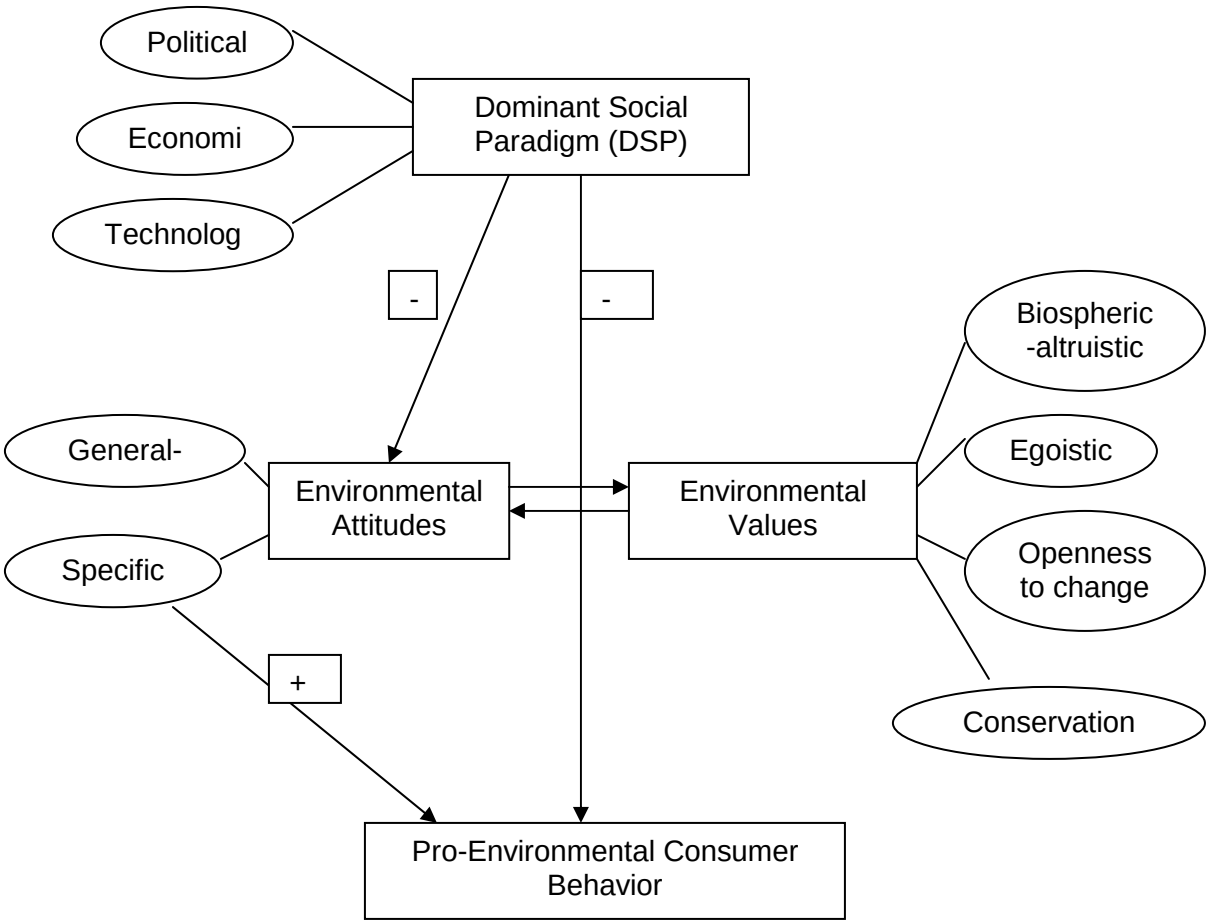

Figure 3: Revised Theoretical Model from Figure One based on Analytic Results. Relationships not Included in this Model Indicate these Relationships were Significant

Table 57
Comparison of Internal Consistency Indices for Individual Scales; NEP, DSP, NAM and ECCB

Scale	Coefficient Alpha—Previous studies	Coefficient Alpha-This study
*NEP	.83	.713
**DSP	.71 (2001) sixteen items	.418
Economic	.61 (2002) 12 items	.145
Political	.29 (2002) 12 items	.253
Technological	.58 (2002) 12 items	.530
**SEP	.68	.774
***NAM	.	.869
Biospheric/Altruistic	.69	.785
Egoistic	.70	.658
Openness to Change	.78	.770
Conservative	.68	.872
****ECCB	Not provided	.948
Recycled Products	.95	.855
Biodegradability	.92	.904
Driving Habits/Oil Dependency	.87	.905
Small Wattage Bulbs	.84	.865
Consumer Purchase	.88	.923
Reduction in Electricity	.65	.727

* Dunlap, et. al (2000)
** Kilbourne et. al, (2002)
*** Stern, Dietz & Guagnano, (1998)
**** Roberts and Bacon, (1997)

and the SEP, the reliabilities found here are greater than in previous research. The NEP r-value is comparable to previous research. The DSP internal consistency values are significantly reduced compared to previous research. In fact, only the technological construct r-value is comparable to previous studies conducted by Kilbourne.

Of primary concern among these measurement indices is the DSP. Previous research by Kilbourne et al. (2002) provided adequate indices for the scale and the economic and technological constructs. The results for this study show only adequate results for the technological construct, and less than adequate results for the political and economic concepts. The political concept, in the short version of the DSP, has not produced a reliable alpha coefficient within the Kilbourne study, or within this work. Politically, the shortened version of the scale has produced less than reliable results, suggesting use of the longer version is necessary.

Further, the longer version has produced only a 0.62 coefficient alpha index in the Kilbourne (2001) study, and thus presupposes these items may not adequately reflect the concept(s) being measured. For future studies, two recommendations are made: to use the longer version of the political concept, and more importantly, to revise the items in this concept to more adequately measure the construct.

The economic and technological constructs have produced adequate reliability constructs in either this study, or the Kilbourne study. The results of this study indicated these variables when acting as a predictor, performed in a theoretically predictable manner. The political construct performed contradictory to theory. Study data indicate the technological factor as the most accurately measured factor, based on internal consistency indices. However, previous research has provided adequate internal consistency numbers to indicate the economic and technological principles are measurable in the shortened form.

Long-term work with the DSP though, will require more stringent scale and item development procedures. A review of the internal consistency scores in Table 55 underscores the need to improve the measurement indices within this scale. The scales represented in the survey have shown adequate internal reliability indices and validity measurement numbers for all scales except the DSP. The indices for the DSP principles are adequate in some previous research studies (Kilbourne et al., 2001) but overall, these indices, although acceptable, are not consistent across studies, and are low among the acceptable r-values.

Additionally, content validity among the items within the DSP needs to be addressed. Changes within individual beliefs regarding our political, economic and technological system may be occurring. Individual attitudes toward the environment appear stronger in each succeeding measurement, although behavior appears to be for maintaining the status quo. Results reveal a linear relationship between the conservative cluster in the NAM and the NEP. The linear relationship suggest as belief in the conservative cluster increases, pro-environmental attitudes will increase, thus signifying the status quo is changing to incorporate

pro-environmental attitudes. Increased press coverage and public education regarding environmental issues may be influencing the beliefs regarding the environment. Effects of this on DSP measurement warrant a review of individual items for content validity.

In fact, prior to completing more research in this area, scale development and item re-structuring should occur within the DSP scale to develop a consistent measurement scale is both reliable and valid. Internal consistency measures of the scales used are strong, minus the DSP. The crux of this study is the DSP is the guiding paradigm, yet the measurement of this paradigm is questionable within at least one principle, in this study, and in Kilbourne's (2002). The sixteen-item scale used in the Kilbourne (2001) study is much better, but remains limited in the political construct. Thus, at the very least, item analysis and item re-wording for this principle should be strongly considered.

Recommendations for Future Research

The work completed in this study has provided the researcher with many considerations for further work in this area. Like Kilbourne and his colleagues, a belief the DSP mediates, moderates, or otherwise influences the responses on the attitudinal scales resonates within this researcher. More importantly, the belief the DSP influences consumer behavior regardless of attitude is very strong. Prior research has spent countless hours developing predictive models using attitudes and values as a predictor of potential behavior, or of behavior itself. Yet the work of Kilbourne, and this work, suggests the DSP and its constructs are more adequate predictors of behavior. Further, behavior as measured in the ECCB within this study is still less than environmentally friendly overall. Based on this, the recommendations for further study focus on the specifics of the study, in particular the questionnaire, expansion of the study population and a re-thinking of the predictive modeling using only attitudes.

Using this study as a guide, several improvements need to be made in the study questionnaire for future use. First, further work should be completed in assessing if the non-continuity of the scales within a study affects the measurement error. Further review of this work

may suggest viewing similar items as pro-anthropocentric and anti-anthropocentric creates confusion among the respondents, and thus affects measurement error. Given the theoretical assumptions underlying the NEP and the DSP, perhaps these scales should have been measured independently within the survey instrument.

Second, more scale development work should be done on the DSP. The paradigm of the DSP is difficult to measure within a scale setting. Yet, the fundamental beliefs of this paradigm need to be measured appropriately. The coefficient alpha value of 0.42 in this study, and with alpha values of between 0.60 and 0.71 in the Kilbourne studies (2000, 2002), measurement and scale development work for this scale is a must. For this study, the 16-item version of the scale may have been better. Previous studies had found little, if any difference between the 12- and 16-item versions in terms of measurement reliabilities. However, due to the low alpha value, the longer scale may have improved the internal consistency.

Suggestions for scale improvement include the development of more succinct and direct scale items. This may require lengthening the scale by several items, but it appears the principles are not being measured accurately, in particular the economic and political constructs. Individual scale reliabilities for the political construct have been low for this study and the 2002 Kilbourne study. In the earlier Kilbourne study, the reliability coefficient for the political construct was higher with one additional item added. Unexplained in this study is the reliability coefficient of the economic construct. In the Kilbourne study (2002), the economic construct received an adequate reliability score using the same items. Kilbourne used the longer DSP scale in the 2001 study, and the internal consistency score was 0.71. For the research in this study, perhaps the longer DSP instrument should have been chosen. However, due to the length of the questionnaire and the similarities of the model being tested to the Kilbourne et al. (2002) study, the shortened version was chosen.

Third, within the behavioral scale, more items relative to oil consumption and production are needed to address the needs of today's economy. Further, the prospect of drilling for oil in

protected lands is an area to address. Initial results from the ECCB are good, however, as the scale addresses some pertinent environmental behaviors. Future studies should examine behaviors more economically significant and relative to current issues. Global warming is a growing issue in society. Primarily, global warming is a social issue. However, to combat global warming and its effects, political, economic and technological advances are needed to address the issue. Current results indicate the attitudes are in place to support these advances. However, if the attitudes are pro-environmental and the behavior remains non-friendly toward the environment, mediating factor(s) exist to allow attitudes to develop into behaviors. Examining the predictability of these scales across a wider variety of pro-environmental behaviors is needed to further substantiate the DSP influence on behavior.

Fourth, the research in this area needs to have a broader sample. These studies, in addition to the Kilbourne studies (2001, 2002), have generally examined the opinions of college students, who were majoring in business. This study focused on college students in eastern North Carolina who were majoring in a liberal arts education. In general, the demographics of this region of the country tend to support DSP principles and are less liberal politically. Thus, it is important to note the samples for the Kilbourne studies and this study have been politically biased to be more conservative.

The sample for this study should be expanded. The model presented here should be examined across multiple sample populations. Consumer behavior involves all facets of our population. In theory, the model should be tested among a representative sample of U.S. citizens. Major issues facing the American public at this time are Global Warming and the need to behave environmentally friendly in an effort to reduce greenhouse gas production. Results indicate individuals are concerned with the environment, but behavior favors the status quo. Attitude research presupposes favorable attitudes toward an issue or object will lead to a behavior or behavioral change. Previous attitude/behavior research has found the more specific

the issue in which the attitude is measured, the better the predictability is toward resulting behavior.

Results indicative of the poor predictive qualities of the environmental attitudes or values are displayed in the predictive findings for consumer purchase. The DSP, even with measurement issues, when used as a predictor, produced a linear model to predict consumer behavior. The predictive models in which the NEP, SEP or NAM were used to predict behavior, also did not produce a significant relationship with the consumer purchase behavioral construct within the DSP. The predicted relationship would have been for the DSP to be the predictor of the consumer purchase construct. This suggests a reluctance to stray from the status quo. Further, the underlying reluctance to deviate from the status quo is from the principles of the DSP. Questions may still exist as to what principle(s) provide the consumer with the decision to maintain the status quo. Theoretically, economic constraints have typically been a control on individual consumer behavior.

The outcomes provide a framework for future analysis in this model. The model examined the predictive qualities of each scale relative to behavior, as reported by the ECCB. Future research should examine the mediating/moderating factors within the model. The study results provide some confirmation of the relationships expressed in the model. A direct predictive relationship between the DSP and consumer behavior was observed. Further, the linear relationship(s) between the DSP and the attitude and value scales were not conclusive. The predictive relationship with the specific environmental issues and consumer behavior was an adequate predictor of consumer behavior among the attitude scales. Yet, the predictive models produced using the SEP as the predictor variable failed to produce the strong relationships, such as those found when using the DSP as the predictor variable.

Results of the current model indicate the NAM significantly predicted a linear relationship with environmental attitudes. Yet, no other significant association was detected within the model using the NAM as either the dependent or independent variable. Does this indicate values

should not be included in the model? The predictive association using the NAM as a predictor variable for environmental attitudes was significant, suggesting the need to keep values in the current model. The placement of the values in the model is undetermined. Results indicate the value scale as a predictor in overall environmental attitudes, and thus it should be included when predicting pro-environmental attitudes. Yet, the values produced no significant relationships when predicting behavior. Further, the values scale and the DSP scale did not produce any significant associations. Is the lack of a significant relationship between these scales a result of the measurement issues inherent in the DSP? Theoretically, an association should exist, as the DSP alleges to influence all attitudes, values and behavior. Thus, in theory, an association should exist on at least a tangential level.

In conclusion, the dominant social paradigm is assumed to be the guide for consumer attitudes, values, and behaviors. Also, prior to this study, the NEP was thought to be a paradigm to guide our attitudes, values and behavior as we transcend into a world in which environmental issues begin to affect our everyday lives. Global Warming is an environmental issue threatening to change the way we act, think, and evolve. In this examination, behavior remains consistent with DSP thought and principle. However, attitudes are pro-environmental, and thus incorporate the principles of pro-environmental behavior. Regulating these thoughts are the permeating principles of the DSP relative to behavior. Thus, the belief in the economic system and technological enterprise continue to guide and keep behavior at the status quo level. Political beliefs continue to develop and change. Examination of the results suggests the political beliefs are in a state of change. Further, the results surrounding the openness to change and conservation value clusters further substantiate a belief values are changing to a more pro-environmental stance.

With belief in conservation values rising in conjunction with more support, attitudes toward the environment insinuate the need to conserve. An openness to change value was thought to be necessary to view the environment or environmental issues as important. But this

examination hints environmental issues are part of mainstream society, and conservative thought relative to these issues is important, if not supportive of the environment. The openness to change value cluster produced no significant linear relationship with either the NEP or SEP attitudes. Although much more research is needed and recommended relative to this finding, the concept of conservative values increasing as pro-environmental attitudes increase implies impending crisis in the DSP.

The DSP remains important when attempting to predict consumer behavior. Pro-environmental attitudes are necessary for an individual to behave in an environmentally friendly manner. However, if the environmentally friendly behavior would, or could become more economically feasible and technologically more convenient, behavior may indeed deviate from the status quo. Eventually, this may occur, but economically, behavior supportive of the status quo is the most feasible. Further, belief in technology to solve all problems remains strong, implying convenience and economics are necessary for individual behavior to change.

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APPENDICES

APPENDIX A

SURVEY OF ENVIRONMENTAL ATTITUDES AND BEHAVIORS

The purpose of the following survey is to measure your opinions, attitudes and behaviors relative to the environment. Please take about 15 minutes to complete this survey. The information collected in this study will remain **completely anonymous**. Please circle the response that best reflects your opinion or attitude for each statement.

SA=Strongly Agree MA=Mostly Agree MD=Mostly Disagree SD=Strongly Disagree

1.	We are approaching the limit of the number of people the earth can support.	SA	MA	MD	SD
2.	Global warming is not really a problem.	SA	MA	MD	SD
3.	Advanced technology provides us with hope for the future.	SA	MA	MD	SD
4.	Future resource shortages will be solved by technology.	SA	MA	MD	SD
5.	The problems related to ozone depletion are overstated.	SA	MA	MD	SD
6.	Humans have the right to modify the natural environment to suit their needs.	SA	MA	MD	SD
7.	Advancing technology is out of control.	SA	MA	MD	SD
8.	Our present rate of consumption can be maintained with no ecological problems.	SA	MA	MD	SD
9.	When humans interfere with nature it often produces disastrous consequences.	SA	MA	MD	SD
10.	Since the volume of water on the earth doesn't change, shortages cannot occur.	SA	MA	MD	SD
11.	The average person should have more input in dealing with social problems.	SA	MA	MD	SD
12.	Human ingenuity will insure that we do NOT make the earth unlivable.	SA	MA	MD	SD
13.	Humans are severely abusing the environment.	SA	MA	MD	SD
14.	World population levels are well within what the world can support.	SA	MA	MD	SD
15.	Business interests have more political power than individuals.	SA	MA	MD	SD
16.	Political equality can be attained only by major changes in election procedures.	SA	MA	MD	SD
17.	The earth has plenty of natural resources if we just learn how to develop them.	SA	MA	MD	SD
18.	Agricultural productivity will decline in the near future.	SA	MA	MD	SD
19.	Plants and animals have as much right as humans to exist.	SA	MA	MD	SD

20.	Political questions are best dealt with through free market economics.	SA	MA	MD	SD
21.	Food shortages are possible in the near future, even in developed countries.	SA	MA	MD	SD

SA=Strongly Agree MA=Mostly Agree MD=Mostly Disagree SD=Strongly Disagree

22.	We focus too much on economic measures of well-being.	SA	MA	MD	SD
23.	The balance of nature is strong enough to cope with the impacts of modern industrial nations.	SA	MA	MD	SD
24.	Serious shortages of some natural resources will occur in the near future.	SA	MA	MD	SD
25.	Individual behavior should be determined by economic self-interest, not politics.	SA	MA	MD	SD
26.	Despite our special abilities humans are still subject to the laws of nature.	SA	MA	MD	SD
27.	Continued use of chemicals in agriculture will damage the environment beyond repair.	SA	MA	MD	SD
28.	The so-called “ecological crisis” facing human kind has been greatly exaggerated.	SA	MA	MD	SD
29.	The best measure of progress is economic.	SA	MA	MD	SD
30.	Some living things are unnecessarily threatened with extinction.	SA	MA	MD	SD
31.	If the economy continues to grow, everyone benefits.	SA	MA	MD	SD
32.	The earth is like a spaceship with very limited room and resources.	SA	MA	MD	SD
33.	Destruction on rainforests will have long term environmental consequences.	SA	MA	MD	SD
34.	Humans were meant to rule over the rest of nature.	SA	MA	MD	SD
35.	Many types of pollution are rising to dangerous levels.	SA	MA	MD	SD
36.	The balance of nature is very delicate and easily upset.	SA	MA	MD	SD
37.	The bad effects of technology outweigh its advantages.	SA	MA	MD	SD
38.	Humans will eventually learn enough about how nature works to be able to control it.	SA	MA	MD	SD
39.	Nuclear accidents causing long term damage are likely in the future.	SA	MA	MD	SD
40.	If things continue on their present course, we will soon experience a major ecological catastrophe.	SA	MA	MD	SD
41.	Nuclear power is the solution to energy shortages.	SA	MA	MD	SD

For the next set of statements, “Please tell me how important each of these is as a guiding principle in YOUR life.

NI=Not Important SI=Strongly Important MI=Moderately Important VI=Very Important EI=Extremely Important

1.	Protecting the environment, preserving nature	NI	SI	MI	VI	EI

2.	A world at peace, free of war and conflict	NI	SI	MI	VI	EI
3.	Social justice, correcting injustice, care for the weak.	NI	SI	MI	VI	EI

NI=Not Important SI=Strongly Important MI=Moderately Important VI=Very Important EI=Extremely Important

4.	Honoring parents and elders, showing respect	NI	SI	MI	VI	EI
5.	Family security, safety for loved ones	NI	SI	MI	VI	EI
6.	Self-discipline, self-restraint, resistance to Temptation	NI	SI	MI	VI	EI
7.	Authority, the right to lead or command	NI	SI	MI	VI	EI
8.	Influential, having an impact on people and events	NI	SI	MI	VI	EI
9.	Wealth, material possessions, money	NI	SI	MI	VI	EI
10.	A varied life, filled with challenge, novelty, and change	NI	SI	MI	VI	EI
11.	An exciting life, stimulating experiences	NI	SI	MI	VI	EI
12.	Curious, interested in everything, exploring	NI	SI	MI	VI	EI

The next series of statements are designed to measure your environmental behaviors or opinions regarding environmental behaviors. Please circle the answer that best represents your opinion.

SA=Strongly Agree MA=Mostly Agree MD=Mostly Disagree SD=Strongly Disagree

1.	I buy toilet paper made from recycled paper.	SA	MA	MD	SD
2.	I buy Kleenex made from recycled paper.	SA	MA	MD	SD
3.	I buy paper towels made from recycled paper.	SA	MA	MD	SD
4.	To save energy, I drive my car as little as possible.	SA	MA	MD	SD
5	To reduce our reliance on foreign oil, I drive my car as little as possible.	SA	MA	MD	SD
6.	I make every effort to by paper products made from recycled products.	SA	MA	MD	SD
7.	I use a low phosphate detergent (or soap) for my laundry.	SA	MA	MD	SD
8.	I have convinced members of my family or friends not to buy some products which are harmful to the environment.	SA	MA	MD	SD
9.	Whenever possible, I buy products packaged in reusable containers.	SA	MA	MD	SD
10.	I try only to buy products that can be recycled.	SA	MA	MD	SD
11.	I normally make a conscious effort to limit my use of products that are made of or use scarce resources.	SA	MA	MD	SD
12.	I will not buy products which have excessive packaging.	SA	MA	MD	SD
13.	When there is a choice, I always choose that product which contributes the least amount of pollution.	SA	MA	MD	SD
14.	If I understand the potential damage to the environment that some products can cause, I do not purchase those products.	SA	MA	MD	SD

15.	I have switched products for ecological reasons.	SA	MA	MD	SD
16.	I have purchased products because they cause less pollution.	SA	MA	MD	SD

SA=Strongly Agree MA=Mostly Agree MD=Mostly Disagree SD=Strongly Disagree

17.	I do not buy products in aerosol containers.	SA	MA	MD	SD
18.	When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.	SA	MA	MD	SD
19.	When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.	SA	MA	MD	SD
20.	I will not buy a product if the company which sells it is socially irresponsible.	SA	MA	MD	SD
21.	I usually purchase the lowest-priced product, regardless of its impact on society.	SA	MA	MD	SD
22.	I do not buy household products that harm the environment.	SA	MA	MD	SD
23.	I try to buy energy-efficient household appliances.	SA	MA	MD	SD
24.	I always try to use electric appliances (e.g. dishwasher, washer, and dryer) before 10am and after 10pm.	SA	MA	MD	SD
25.	I have tried very hard to reduce the amount of electricity that I use.	SA	MA	MD	SD
26.	I buy high-efficiency light bulbs to save energy.	SA	MA	MD	SD
27.	I have purchased a household appliance because it uses less electricity than other brands.	SA	MA	MD	SD
28.	I have purchased light bulbs that were more expensive but saved money.	SA	MA	MD	SD
29.	I have replaced light bulbs in my home with those of similar wattage so that I will conserve on the electricity that I use.	SA	MA	MD	SD

The next set of questions are requesting information about you the respondent. The information that you provide in these questions will be kept COMPLETELY ANONYMOUS. Please check the appropriate response.

1. Are you:
   - **o** Male
   - **o** Female
2. Are you between the ages of:
   - **o** 16-19
   - **o** 20-24
   - **o** 25-34
   - **o** 35-44
   - **o** 45-54
   - **o** Over 55
3. Are you a Full-Time or Part-time student?
   - **o** Full-time
   - **o** Part-time

4. What is your current class status?

- **o** Freshman
- **o** Sophomore
- **o** Junior
- **o** Senior

5. What is your intended major?

_____

6. What is the zip code of your permanent residence?

_____

7. Please select the category that best represents your racial/ethnic background.

- **o** African American
- **o** Asian/Pacific Islander
- **o** Caucasian
- **o** Latino/Central/South American
- **o** Other

8. What is your work status?

- o Full-time employee
- o Part-time employee
- o Retired
- o Do not work at current time

9. If you are a full-time employee, what is your current profession or job title?

_____

10. Please select the category that best represents your household's annual income, before taxes?

- o 0-$9,999
- o $10,000-$19,999
- o $20,000-$29,999
- o $30,000-$39,999
- o $40,000-$49,999
- o $50,000-$59,999
- o $60,000-$69,999
- o $70,000-$79,999
- o $80,000-$89,999
- o $90,000-$99,999
- o Over $100,000

YOUR TIME IS GREATLY APPRECIATED

APPENDIX B

INFORMATIONAL LETTER

November 6, 2006

Dear Student:

I am a Doctoral Candidate in the Warnell School of Forestry and Natural Resources at The University of Georgia. I invite you to participate in a research study entitled ["The Influence of the Dominant Social Paradigm on Consumer Environmental Attitudes, Behaviors and Values" that is being conducted as a doctoral dissertation study. The purpose of this study is to continue the re-conceptualization of the environmental crisis using the Dominant Social Paradigm as the guiding force in individual decisions regarding the environment.

Your participation will involve completing a survey of questions regarding your environmental attitudes, values and behaviors. To complete the survey should take about 10 minutes of your time. Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time without penalty. Your participation in this study will in no way affect your grades, class standing or your relationship with the professor. Further, your participation and your survey responses will remain completely anonymous. The results of the research study may be published, but your name will not be used. In fact, the published results will be presented in summary form only. Your identity will not be associated with your responses in any published or non-published format.

The findings from this project may provide information on environmental attitudes and values and corresponding behaviors. Further benefits include information on the predictability of behavior from a particular attitude/value measure. There are no known risks or discomforts associated with this research.

If you have any questions about this research project, please feel free to call me 919-658-7804 or email me at blewis@moc.edu or brlewis@uga.edu. Questions or concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, 612 Boyd GSRC, Athens, Georgia 30602-7411; telephone (706) 542-3199; email address irb@uga.edu.

By completing and returning this questionnaire, you are agreeing to participate in the above described research project.

Thank you for your consideration! Please keep this letter for your records.

Sincerely,

Burt Lewis

APPENDIX C

WHAT TO SAY AS AN INTERVIEWER

Hello, My name is XXXX. I am her on behalf of Professor Burt Lewis. He is collecting data on your ENVIRONMENTAL ATTITUDES AND BEHAVIORS. This research will support his doctoral dissertation. Please take a minute to look over the informational letter and then if you choose, please complete the survey that I will distribute. Once you have completed the survey, I will collect them. The survey should take about 10-15 minutes to complete.

THANK YOU SO MUCH FOR YOUR TIME. ALSO, PLEASE THANK THE PROFESSOR FOR HIS OR HER TIME.