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Sustainable Innovation Diffusion in Construction: The Characteristics of Virginia Consumers and Ecological Behavior

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Introduction

Research Problem

Through the known processes surrounding the commercialization of innovation, products require multiple phases of development and research. These phases involve many different "themes;" particularly describing and investigating the development, marketing, acceptance, and end-use of innovative products (McCoy et al. 2007). Diffusion theory and adoption theory (Rogers 2003) are two such "themes" accepted by both the construction industry and the scientific community surrounding product acceptance and end-use (McCoy et al. 2007).

As defined by McCoy et al. (2007), diffusion theory "attempts to explain the characteristics of social groups that affect the acceptance of a product [while] adoption theory attempts to further explain the characteristics of individuals within those social groups." McCoy et al. (2007) goes on to explain that diffusion and adoption theory are the basis for the innovation, while business is the basis for the commercialization of these products.

The commercialization of innovative products details the actions and process decisions that are executed in an attempt to deliver a product to market. Although the process of commercialization involves steps that investigate market diffusion and use, most social scientists view the diffusion of innovation as a "natural process" (McCoy et al. 2007). Furthermore, users are most often characterized as "more or less passive *receptors* of innovative products" (McCoy et al. 2007). As a result, such information as attitudinal and demographic characteristics are often neglected as part of the process. Their understanding and use could possibly increase product diffusion/use.

This neglect further permeates into the more finite marketing aspects of innovative sustainable and green construction products, including product advertising. During the late 1980's and early 1990's, environmental concern began to grow and with it consumer concerns regarding non-environmentally friendly construction products (Carlson et al. 1996). As a result green marketing grew, particularly in the area of "green advertising" (Carlson et al. 1996). In the race to portray themselves and their products as green, businesses focused on statements regarding product orientation, process orientation, image orientation, and environmental statements for their advertising strategies (Carlson et al. 1996).

Process orientation, image orientation, and environmental statements all focus largely on the environmental attributes and achievements of the business or the product manufacturer (Carlson et al. 1996). Product orientation strategies contrastingly use statements that focus on the "environmentally friendly attributes that a product possesses, e.g., ('this product is biodegradable.')" (Carlson et al. 1996). At first glance, product orientation appears to show an attempt at marketing products on the basis of what influences users; however, the research and statements of such environmental claims are product-focused as opposed to human-focused. The marketing of innovative products has and continues to rely more heavily on product design, to fill technical voids in the marketplace, than on the attitudes of the product's end users that influence diffusion (McCoy et al. 2007).

Research has shown that ignoring product user attitudes and perceptions has resulted in a lack of consumer interest and buy-in regarding innovative sustainable and green construction products (Carson et al. 1996). Carlson et al.'s (1996) view of the "seemingly waning consumer interest in environmental products" could be the result of limited research data addressing innovative sustainable and green construction products diffusion theory; and the limited incorporation of such data into aggressive consumer-based marketing strategies. Such data could aid the way in which innovative sustainable and green construction products are marketed, resulting in increased interest and buy-in from individuals and society as a whole.

Research Focus

Sustainable product production and supply takes a path similar to traditional construction materials through distribution networks. All sustainable products must first be developed. Once developed, they enter the manufacturing stage. From the manufacturing stage, products are shipped to retail suppliers and wholesalers.

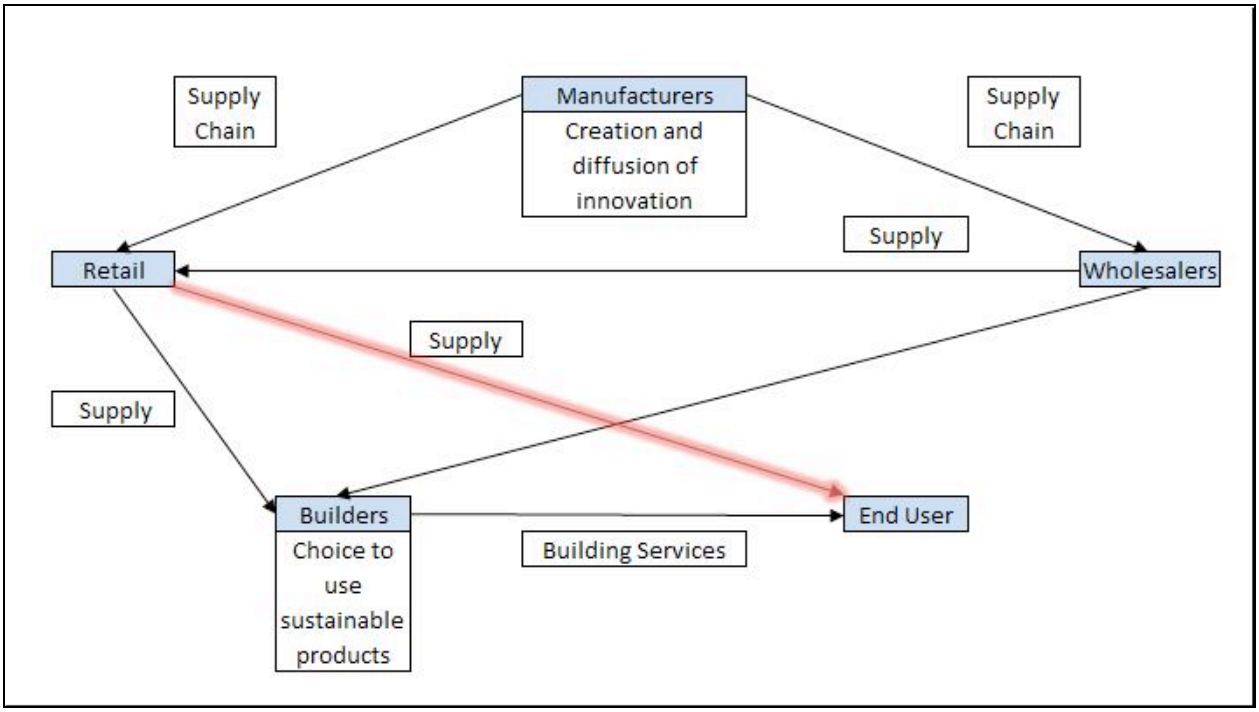
Wholesalers supply materials to retail establishments; however, in some markets they may bypass the retail supplier and provide materials directly to builders and construction firms. Wholesalers in most markets will not provide a source of building materials directly to the retail purchaser.

Retail supply chains, which are similar to wholesale outlets, supply materials to builders; however, retail suppliers are usually the sole source of sustainable and green construction

products and materials to the homeowner and do-it-yourself client. Because of these economic based market restrictions, homeowners and do-it-yourselfers (consumers) must obtain such sustainable or green materials either from a retail construction material supplier, or indirectly through their request to a builder to implement sustainable materials and practices when constructing or remodeling their home or business.

Builders can in many cases influence diffusion by persuading consumers to use certain products, based upon their building experience or trust in a particular product. Wholesalers, conversely, in most cases have comparatively little influence on consumers at the point of purchase. The most intimate decision point of purchase for a consumer appears to be at the retail supply chain. Figure 1 graphically illustrates this connection.

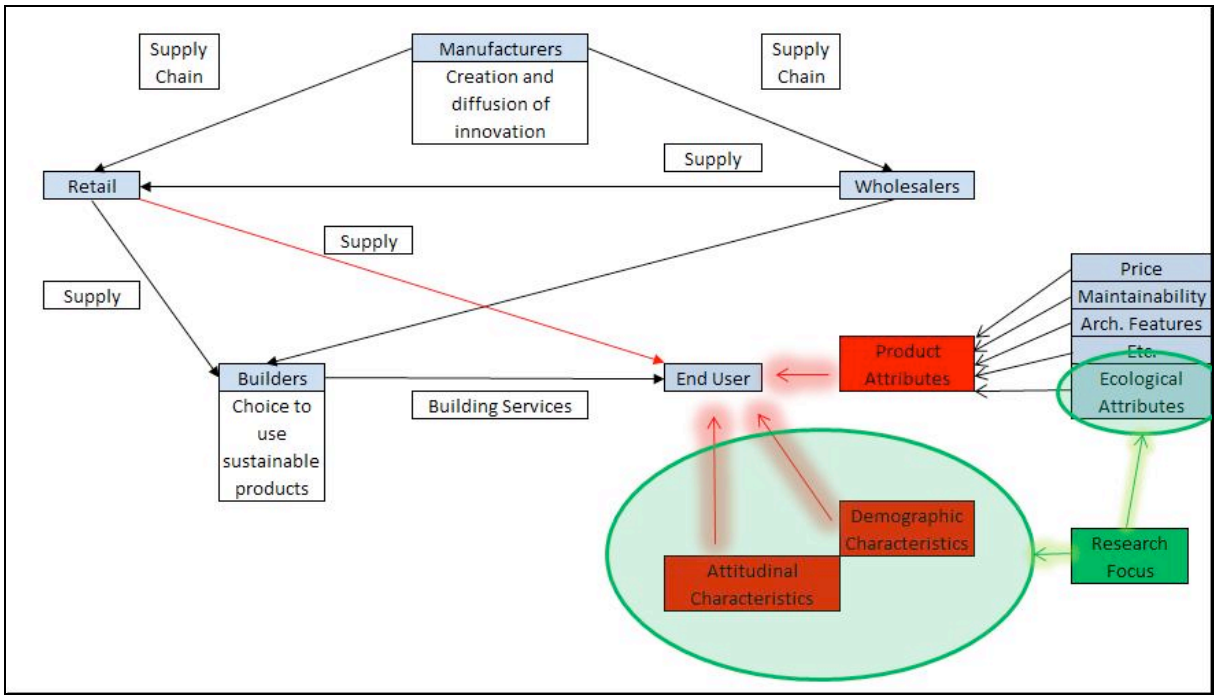
Figure 1. Material Supply Chain and Market Interactions



Diffusion theory, as previously defined, "attempts to explain the characteristics of social groups that affect the acceptance of a product" (McCoy et. al. 2007) (Rogers 2003). Such characteristics can include both attitudinal and demographic correlates; which define not only the user but the larger group, influence their perceptions, and influence their actions in regards to purchase behavior. Figure 2, which is a reexamination of figure one, illustrates the internal (attitudinal

and demographic) and external (product attributes) drivers and characteristics of the user which influence their perceptions and behaviors regarding products. Additionally, Figure 2 illustrates the broader focus area for the present research.

Figure 2. Diffusion Theory of Consumers Surrounding Innovative Sustainable and Green Construction Products

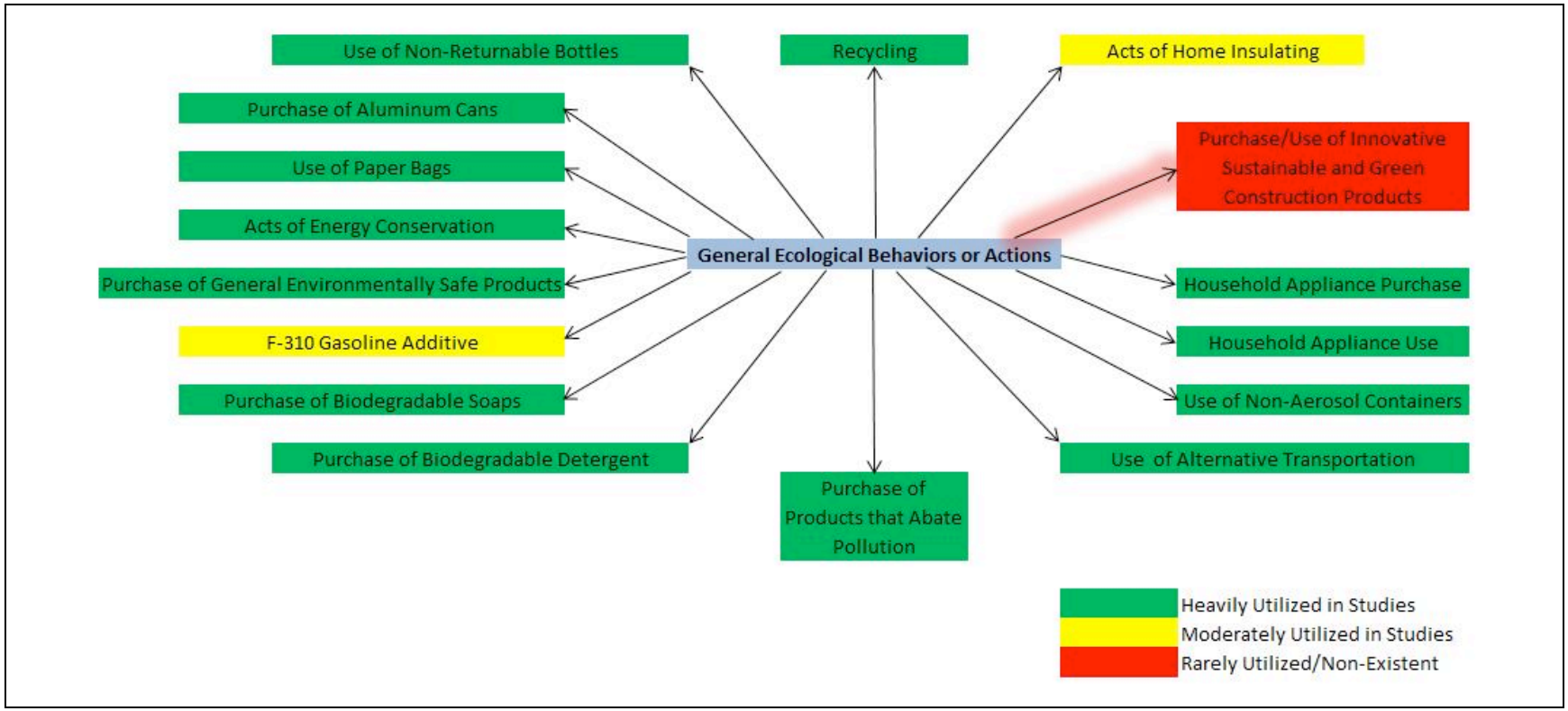


Understandably, products can be as broad as the products' attributes themselves, hence the need for a more narrowed focus, particularly in the realm of the product or product category utilized in the study. As later highlighted by the background research, most research has utilized this same research focus area, however in the broader context and use of multiple products, product types, and ecological behaviors or actions.

This present study's focus differs in the fact that it narrows the focus of the study to exclude more general products and ecological behaviors or views; highlighting only innovative sustainable and green building products. This area of research is relatively uncharted and further defines the specific research focus and point of departure for this study. Figure 3 graphically displays the general ecological behaviors and actions which have been utilized by past research, their relative level of investigation, and the point of departure of the present study (highlighted in

red). Appendix A documents the use of the various views, behaviors and products by each research study discussed in the subsequent background section.

Figure 3. General Ecological Behaviors and Actions and Their Relative Utilization by Past Studies (Gap Analysis)



Research Objectives

The overall research goal is presented as the examination of innovative, sustainable and green building product diffusion theory through the demographic and attitudinal correlates that describe these product-users. Based upon the research problem, focus and goal; this research pursued the fulfillment of several objectives. The research objectives include:

1. Examine past research studies surrounding the attitudinal and demographic correlates of ecologically based-attitudes and behavior, as well as innovative sustainable and green construction product diffusion.
2. Conduct a survey of consumers of innovative sustainable and green construction products and materials (who choose products on the basis of their ecological/environmental characteristics), to analyze the extent and validity of these attitudinal and demographic correlates for building-related products.
3. Develop an attitudinal and demographic profile of the innovative sustainable and green construction product user based upon the quantitative results of the survey.

Background

Past literature surrounding the attitudinal and demographic correlates of ecologically-based behavior of consumers is phenomenally rich. Research and its corresponding literature dates as far back as the late sixties; with the most recent literature, which expands and contributes to these foundations, dating to the late nineties.

The first article that contributes to this body of knowledge was the result of research conducted by Leonard Berkowitz and Kenneth G. Lutterman, titled "The Traditional Socially Responsible Personality." The article was originally published in *Public Opinion Quarterly* in the summer of 1968.

Berkowitz and Lutterman (1968), as a foundation, cite and use the descriptors of social responsibility (as researched by Gough, McClosky and Meehl) as the attributes of individuals which include; high academic drive and purpose, low anti-Semitism and ethnocentrism, accelerative academic achievement and low expression levels of rebelliousness, anxiety, and hostility (Gough et. al. 1952) (Berkowitz and Lutterman1968).

Furthermore, such socially responsible individuals portrayed a vast concern for ethical and moral issues, possessed strong structures of self imposed demands, and a strong level of self-confidence (Gough 1952) (Berkowitz and Lutterman 1968).

Berkowitz and Daniels (1964) used a very similar personality scale as employed by Gough et. al. (1952), which was adapted from Harris (1957) to find that women who scored high "tended to work harder on behalf of a peer who needed their assistance when the social situation defined this help as socially proper behavior" (Berkowitz and Lutterman 1968).

Berkowitz and Lutterman's (1968) purpose within the present research was to expand upon the investigation of the socially responsible personality as set forth by Gough (1952) and Berkowitz and Daniels (1964), through an investigation of the attitudinal and behavioral correlates that related to the Social Responsibility Scale (SRS). This was an attempt to gain a "better understanding of the construct" of social responsibility (Berkowitz and Lutterman 1968).

Berkowitz and Lutterman (1968) utilized a personality scale that was originally utilized by Harris (1957), coupled with several other items, to develop the questionnaire. The questionnaire

was deemed as an "abbreviated Social Responsibility Scale (SRS)." The questionnaire was conducted as a probability sample consisting of 766 Wisconsin adults in 1963 (Berkowitz and Lutterman 1968).

The 766 Wisconsin interviewees were further divided into social class based upon their own response to the social categorization question. Forty-two of the 766 responses were discarded, 310 placed themselves in the middle class, while 424 assigned themselves to the working class. The SRS scores were related to these categorizations due to the author's interest and concern surrounding each person's social level (Berkowitz and Lutterman 1968).

The results of the study revealed that the highest scores on the SRS were in direct correlation with class identification, with the middle class respondents having the highest scores. Additionally, education level was positively related to SRS, while younger individuals obtained higher SRS scores. Interestingly, sex also played an important role in delineation of the SRS scores. Women were revealed as being more likely to possess higher SRS scores than men (Berkowitz and Lutterman 1968).

High scorers within both the middle and working class failed to "regard themselves as alienated from their society," and "relatively few of them saw themselves as powerless." "The responsible clearly preferred inner-direction over other-direction" (Berkowitz and Lutterman 1968).

High scorers within both groups also possessed the highest level of political interest, with a greater proportion of high scorers favoring the Republican Party. When individually analyzed however, the working-class "responsibles" leaned towards Democratic affiliation (Berkowitz and Lutterman 1968).

When further examination was conducted based upon the respondent either residing in an urban or rural community; "60 percent of the middle-class rural resident high-scorers favored the Republican Party, with only 49 percent middle-class urban resident high-scorers expressing a Republican based political preference" (Berkowitz and Lutterman 1968).

Although Berkowitz and Lutterman (1968) did not examine the context of social responsibility in relation to environmental attitudes and actions, it is apparent that the qualities and descriptors of

the socially responsible individual very well could influence, help define, or filter over into the concerns and decisions of environmentally conscious consumers.

"Incorporating Ecology into Marketing Strategy: The Case for Air Pollution;" authored by Harold H. Kassarjian, was published in the *Journal of Marketing* in July of 1971. Kasarjian's (1971) research is the first article highlighted in this body of knowledge that addresses the relationship between marketing and the public's attitude towards an environmental issue, particularly air pollution. Kassarjian (1971) states that the purpose of the study was to examine "the reaction of consumers to an advertising campaign for a gasoline that promised reduced air pollution and to uncover some of the marketing correlates of attitudes toward air pollution."

The gasoline in question was known to have an additive referred to as F-310. It was the claims of the product manufacturer that this additive led to reduced air pollution and automobile emissions. The introduction of the new fuel-product took place in Los Angeles, California during 1970 and was coupled with an intense media, promotional product campaign (Kassarjian 1971).

Kassarjian (1971) utilized a survey questionnaire (242 total questionnaires) to examine the attitudes towards air pollution. Six hypotheses were suggested as potential results of the research. The hypotheses stated, "individuals showing a greater concern for air pollution would be more aware and receptive to F-310 advertisements," and "would claim to be more willing to pay a slightly higher price for a pollutant-free gasoline than there less concerned counterparts" (Kassarjian 1971). Additionally, "car owners would show greater concern for air pollution than non-owners due to the greater opportunity to see, smell, and experience smog on the highways and freeways" (Kassarjian 1971). The fourth hypothesis stated, "heavy users of gasoline and large car owners would be more concerned than light users or small car owners" (Kassarjian 1971). The last two hypotheses addressed the demographic correlates of higher concern. Kassarjian (1971) hypothesized that individuals with higher education, higher socio-economic status, and less than thirty years of age would exhibit higher levels of concern towards air pollution.

The results revealed that over thirty-one percent of respondents felt that air pollution was the most serious problem facing society at that time; with advertising that incorporated an appeal to pollution, as the most effective way in tapping this group. Air pollution scored roughly twenty

percentage points higher than the Vietnam War. Over sixty-two percent of respondents were able to identify the company, which introduced the new gasoline product. Additionally, fifty-three percent of automobile owners claimed to have purchased gasoline containing F-310 within six weeks or less of its introduction to the market, with more than half having paid an additional two to twelve cents per gallon (Kassarjian 1971).

The demographic variables however, failed to reveal any relevant differences in responses or the level of concern surrounding air pollution. Kassarjian (1971) expresses that the most important variable of concern for the marketer seems to be the level of concern regarding the issue. Furthermore, he states, "with a good product based on ecological concerns, the potential for a marketer seems to be impressive" (Kassarjian 1971).

Kassarjian's (1971) research addressed public concerns of a single environmental issue; however, a significant amount of literature is available which collectively addresses the concerns, attitudes, and actions of the public surrounding environmental issues.

James McEvoy is the first author highlighted in this literature review that addresses public concern with the environment and environmental issues collectively. McEvoy's, "The American Public's Concern With the Environment: A Study of Public Concern" was first published in *Social Behavior, Natural Resources, and the Environment* by Harper and Row in 1972.

McEvoy (1972) recognized a historical change in the overall orientations concerning man's perception and position to the natural environment. Of these historical perceptions, McEvoy (1972) highlights three in which to discuss and elaborate.

The first of these three is termed as the "transformational" orientation (McEvoy 1972). McEvoy (1972) defines this orientation as obtaining maximum economic return from the exploitation of natural resources. This view is reminiscent of mankind's initial fear of the environment and Puritan "desire to conquer and control the environment for man's end" (McEvoy 1972).

The second view, which was a major change in man's perception of nature and the environment, was the "preservationist" orientation (McEvoy 1972). This orientation became prevalent during the 19th century as what is now known as the American wilderness movement, with such players as John Muir and the Sierra Club (McEvoy 1972).

A more recent and emergent orientation, the third of the discussion, which could be termed as a conservation based orientation; "attempts to harmonize development with natural forms and environmental quality," which has "found support in the planning professions and among some developers" (McEvoy 1972).

The goal of McEvoy's (1972) research was to examine figures surrounding the volume of periodicals in circulation which related to environmental issues, the causes for such growth in concern, and an examination and discussion of a survey that addressed the current rise and level of the American public's concern (McEvoy 1972).

The first of McEvoy's (1972) investigations, periodicals (particularly articles and magazines), revealed a steady increase in the volume of literature regarding environmental issues between the years of 1953 and 1969. He notes a study conducted by Russell (1970) who expressed an increase in the volume of literature regarding "urban environmental problems; including open space issues, pollution, population growth and density, and planning." Of importance even to today's green and sustainable movement, the growth in media attention centered on environmental problems created by "industrialization, legislation, conservation education and threatened animal species" (Russell 1970). Accordingly, a historical trend reveals that media "reflect and are anticipating the environmental problems introduced into the society through the joint effects of large-scale urbanization, population growth, and industrialization" (McEvoy 1972).

The second major purpose of McEvoy's (1972) study, which is most significant and relevant to the present research study, was the examination of a survey conducted in the Fall of 1969 by the Gallup Organization, which investigated the opinions of 1503 Americans concerning problems surrounding the natural environment. Table 1. Level of Environmental Concern, outlines the results of the survey regarding the levels of environmental concern in relation to respondents' demographic characteristics (McEvoy 1972).

Table 1. Level of Environmental Concern

	Deeply Concerned	Somewhat Concerned	Not Very Concerned	No Opinion	Total	Number of Interviews
			(in percentages)			
National Results	51	35	12	2	100	1503
By Sex						
Men	56	31	10	3	100	744
Women	46	38	14	2	100	759
By Age						
21-34 years	51	41	7	1	100	403
35-49 years	50	38	10	2	100	476
50 years & older	52	28	16	4	100	605
Undesignated - 19						
By Education						
College	62	32	6	*	100	395
High School	52	37	10	1	100	748
Grade School	39	34	20	7	100	352
Undesignated - 8						
By Annual Family Income						
$10,000 and over	58	34	8	0	100	449
$7,000-$9,999	53	38	8	1	100	336
$5,000-$6,999	55	35	8	2	100	237
Under $5,000	41	34	20	5	100	463
Undesignated - 18						
By Size of Community						
1,000,000 & over	51	36	8	5	100	277
250,000-999,999	52	35	11	2	100	296
50,000-249,000	55	35	9	1	100	235
2,500-49,999	52	31	16	1	100	233
Under 2,500	46	37	14	3	100	462
By Region of Country						
East	46	38	12	4	100	425
Midwest	56	34	9	1	100	400
South	44	36	16	4	100	428
West	59	31	10	*	100	250

* Less than half of 1 percent

(McEvoy 1972)

The study, as highlighted by McEvoy (1972), reveals that men, people of higher educational attainment, and higher income tend to be more deeply concerned about the environment in comparison to their counterparts. Regarding age, "there is little substantial difference in level of concern by age with the exception of a nine percentage point difference between the 21-33 age group and the over-50 age group in the proportion of these groups that are 'not very concerned' about the problems raised" by the survey question regarding level of concern (McEvoy 1972). Additionally, it appears that the level of environmental concern is greater in the Western United States as well as in urban environments (McEvoy 1972).

"Environmental Quality: How Universal is Public Concern," was written by Louis N. Tognacci, Russell H. Weigel, Marvin F. Wideen, and David T. A. Vernon. Published in *Environment and Behavior* in March of 1972; this article added to and accompanied McEvoy's (1972) literature regarding attitudinal and demographic correlates of concern with the environment.

This research "was designed to probe the extent to which environmentally concerned individuals share general patterns of ideological and demographic characteristics" (Tognacci et.al. 1972). The method involved employing a questionnaire to a final sample of 141 residents of Boulder, Colorado between the ages of 18 and 65. The questionnaire consisted of two categories of variables, including environmental concern variables and socio-demographic variables. The environmental concern variables consisted of two questionnaire categories, which addressed "general environmental goals" as well as "specific environmental attitudes" (Tognacci et. al. 1972). The socio-demographic variables consisted of two questionnaire categories, which addressed "sociopolitical ideologies" as well as "demographic variables" (Tognacci et. al. 1972).

The results of the study revealed that environmentally concerned individuals represented a more liberal orientation, were of younger age, and were more educated than those individuals who express lower concern (Tognacci et. al. 1972).

These results mirrored McEvoy (1972) as well as Berkowitz and Lutterman (1968) in the category of education, however showed conflicting results when compared to Berkowitz and Lutterman (1968) in the category of political/social orientation; with the prevalence of a stronger relationship between liberal ideology and environmental concern emerging in Tognacci et. al.'s (1972) research.

An article that expands upon the investigation of demographic correlates of environmental concern is "The Socially Conscious Consumer," written by W. Thomas Anderson, Jr. and William H. Cunningham. The article was published in the *Journal of Marketing* in July of 1972.

Anderson and Cunningham (1972) sought to "determine the extent to which consumers who differ by degree of social consciousness may be distinguished by selected demographic and sociopsychological attributes." The authors developed two distinct hypotheses. The first hypothesis, with regard to demographic characteristics, stated that consumers with high levels of social consciousness will differ from those with lower levels. The second hypothesis, with regard to sociopsychological characteristics, stated that consumers with high levels of social consciousness will differ from those with lower levels (Anderson and Cunningham 1972).

A mail questionnaire was instituted in April of 1971 to 1,200 Austin, Texans' households. Of those 1,200, 412 surveys were completed. Within the survey, the Social Responsibility Scale (Berkowitz and Lutterman 1968) was utilized to determine an individual's level of social responsibility. Six different demographic variables and descriptors were utilized; including occupation of the head of house, 1970 total income for the family, head of house educational level, the socioeconomic status of the family, head of house's age, and stage of life cycle of the family. Additionally, six sociopsychological variables and descriptors were utilized including, "alienation-a feeling of isolation from one's community, society, and/or culture; dogmatism-one's degree of open or closed mindedness; conservatism-one's adherence to traditional attitudes and values; status consciousness-a concern for social recognition, esteem, or prestige; cosmopolitanism-a global, nonparochial perspective and orientation; and personal competence-a feeling of mastery of one's personal life and environment" (Anderson and Cunningham 1972).

The findings of the study revealed a significant correlation between occupation, age of head of household, and socioeconomic status. Anderson and Cunningham (1972) note that "social consciousness tended to vary directly with socioeconomic status," as well as "occupational status and inversely with age." Furthermore, social consciousness "tended to vary inversely with dogmatism, conservatism, and status consciousness, and directly with cosmopolitanism" (Anderson and Cunningham 1972). The overall interpretation of the socially conscious consumer revealed by this research "is that of a pre-middle age adult of high occupational achievement and socioeconomic status. He is typically more cosmopolitan, less conservative,

less status conscious, less alienated, and less personally competent than his less socially conscious counterpart" (Anderson and Cunningham 1972).

Thomas C. Kinnear, James R. Taylor, and Sadrudin A. Ahmed extended upon Anderson and Cunningham's (1972) work as highlighted in the article "Ecologically Concerned Consumer: Who Are They?" Kinnear et. al. (1974) came to the realization that the Social Responsibility Scale was void of any actual behavioral measures. They chose to incorporate a concern measure, which "contained behavioral purchasing measures and attitudes specifically related to socially conscious purchasing" (Kinnear et. al. 1974). Because of this realization, this article is the first within the body of knowledge to extensively incorporate and investigate behavior in relation to ecological/environmental concern.

It is important to note that the authors chose to define and mold two distinct dimensions of ecological concern. The first dimension of ecological concern states that "a buyer's attitude must express concern for ecology; and second, he must indicate purchasing behavior that is consistent with maintenance of the ecology system" (Kinnear et. al. 1974). They go on to emphasize the point that "it is possible for a consumer to purchase in an ecologically concerned manner without being aware that he is doing so" (Kinnear et. al. 1974).

Within the study, behavioral and attitudinal measures were combined with demographic measures, which included; "age of wife, presence of children, education of wife, education of husband, employment of wife, occupation of principle wage earner, and family income" (Kinnear et. al 1974). Kinnear et. al. (1974) also utilized scales, which measured "aggression, desirability, dominance, harm avoidance, play, sentinence, understanding, self esteem, tolerance, anxiety, rebelliousness, and depression." Their study was also the first within this body of knowledge to introduce and incorporate the predictor known as Perceived Consumer Effectiveness (PCE), which is defined as "a measure of the extent to which a respondent believes that an individual consumer can be effective in pollution abatement" (Kinnear et. al. 1974).

Unlike Anderson and Cunningham (1972), "no demographic characteristics were found to be statistically significant in relation to the ecological concern index" (Kinnear et.al 1974). However, the ecologically concerned consumer profile did arise as someone with high scores in perceived consumer effectiveness, tolerance (open to new ideas), understanding (intellectual

curiosity fulfillment), harm avoidance (personal safety), as well as someone who could be categorized as earning a high level of income (Kinnear et. al 1974).

Fredrick E. Webster, Jr.; in his article "Determining the Characteristics of the Socially Conscious Consumer," attempted to improve upon the work of Berkowitz and Lutterman (1968), Kassarjian (1971), Anderson and Cunningham (1972), and Kinnear et. al (1972). Webster (1975) defined the socially conscious consumer as a "consumer who takes into account the public consequences of his or her private consumption or who attempts to use his or he purchasing power to bring about social change."

To examine "what type of a person is likely to be involved in socially conscious consumer behavior," Webster (1975) developed and utilized what came to be known as the social involvement model. The social involvement model utilized three dependent variables, which included Recycling (R), the Socially Conscious Consumer Index (SCC), and the Social Responsibility Index (SR) (Webster 1975). The independent variables were divided into four categories of variables, including Attitudinal Variables, Personality Variables, Social Activity Variables, and Socioeconomic and Demographic Variables (Webster 1975). The Attitudinal Variables included the Social Responsibility Index (SR), Perceived Consumer Effectiveness (CE), and Perceived Power of Big Business (PB) (Webster 1975). The Personality Variables included Dominance (DO), Responsibility (Re), Socialization (So), and Tolerance (To) (Webster 1975). Community Activities (CA) and Church Going (CG) made up the Social Activity Variables (Webster 1975). Within the Socioeconomic and Demographic Variables, Education (E) was the only variable which appeared "relevant" to test, however information regarding age, sex, marital status, occupation, number and ages of cars owned, and income were collected (Webster 1975).

Webster (1975) developed three hypotheses in which to test. The first hypothesis stated that the "socially conscious consumer must be aware of the problem and must also be aware of the opportunities to buy products and services which are responsive to the problem" (Webster 1975). The second hypothesis stated that the socially conscious consumer "must perceive that it is within his power as an individual citizen to have a favorable influence on the problem situation" (Webster 1975). The third and final hypothesis states that "the socially conscious consumer will

have attitudes toward social affairs and community involvement which are consistent with his behavior" (Webster 1975).

To test his hypotheses, Webster (1975) utilized a questionnaire within a New England community with a population of roughly 7,000 individuals. Of the 432 questionnaires mailed, 231 usable questionnaires were returned (Webster 1975).

In relation to the Socially Conscious Consumer Index (SCC), Webster (1975) found that Perceived Consumer Effectiveness (CE), Dominance (Do), Tolerance (To), sex, Perceived Power of Big Business (PB), and income were significant influencers. "Socially conscious consumers tended to be female, agree that big business had too much power in this country, and to have higher family incomes" (Webster 1975). Perceived Consumer Effectiveness (CE) also showed a strong relationship to SCC (Webster 1975).

The Social Responsibility Scale (SR) showed high correlation with Perceived Consumer Effectiveness (CE), Responsibility (Re), and Community Activities (CA). Webster (1975) thus concluded, that "it is the socially responsible consumer (as defined by SR), not the socially conscious consumer (as defined by SCC), who is involved in community affairs and who has internalized, and whose life is influenced by, accepted social values." The socially conscious consumer however; as she is defined, "is actually engaged in behavior that is somewhat counter to the norms of the community, appears to be somewhat insensitive to social pressures but also accepting of the views of others (high To scores), and willing to exercise initiative (Do) based on a conviction that her own actions can make a difference (CE)" (Webster 1975).

In regards to Recycling (R), the variables which were of significance included the Socially Conscious Consumer Index (SCC), Education (E), Perceived Consumer Effectiveness (CE), Tolerance (To), Income, Responsibility (Re), and the Social Responsibility Scale (SR) (Webster 1975).

Based upon these results, Webster (1975) concluded that "the socially conscious consumer is not the 'pillar of the community' who scores high on measures of social responsibility and engages in a wide assortment of community activities. Rather, he, or more likely she, is willing to engage in purchase behavior that may not be 'popularly accepted' but is nonetheless consistent with her own standards. At the same time, she is less ready to judge the values and actions of others. She

tends to think business has too much power, and she tends to have higher household income than her less socially conscious counterpart."

In December of 1975, another article arose which similarly questioned the previous research of others. Riley E. Dunlap authored "The Impact of Political Orientation on Environmental Attitudes and Actions" which questioned the results of Tognacci et. al. (1972) on the basis of there being much conflicting evidence; regarding the relationship between environmental concern, political/social ideology, and political affiliation (Dunlap 1975).

In an attempt to clarify this relationship, Dunlap's (1975) research examined "the effects of party preference and political ideology on the actions and attitudes" of 237 University of Oregon, liberal arts students during May of 1970.

Dunlap (1975) hypothesized that "students indicating a Democratic party preference will manifest higher rates of 'pro-environmental' attitudes and actions than those indicating a Republican preference, and students indicating 'liberal' political ideologies will manifest higher rates of 'pro-environmental' attitudes and actions than those indicating 'conservative' political ideologies."

Although Dunlap (1975) examined many relationships regarding orientation and environmental concern, two relationships in particular stand out and are more relevant to the present research. These two relationships included "General Orientation to Environmental Issues" and "Pro-Environmental Action: Participation and Support" (Dunlap 1975).

Surrounding the relationship of "General Orientation to Environmental Issues" and political preference, Dunlap (1975) found that "students who indicated a preference for the Democratic party were more likely to have a 'great' interest in environmental issues than their Republican counterparts." Furthermore, "Liberal-Left students were almost twice as likely as Conservatives to express 'great' interest in environmental issues" (Dunlap 1975).

Surrounding the relationship of "Pro-Environmental Action: Participation and Support" and political preference, Dunlap (1975) found that "Democratic students were only slightly more likely to have taken action on an environmental issue than republican students. On the other hand, there is a strong relationship between ideology and environmental action, as the Liberal-

Left students were more than twice as likely to have taken such action as were the Conservative students" (Dunlap 1975).

Dunlap's (1975) findings revealed validity and support for Tognacci et. al.'s (1972) findings; regarding the apparent division between Republican and Democratic affiliation, as well as Conservative and Liberal ideologies, in regards to environmental concern and action.

Several authors, within the body of knowledge have chosen to expand upon the literature regarding Perceived Consumer Effectiveness (PCE) by investigating the connections between Perceived Consumer Effectiveness (PCE), Locus of Control, and environmental attitudes and actions.

One such author is Karl E. Henion II, who authored "The Ecologically Concerned Consumer and Locus of Control. Henion's research was originally published in *Ecological Marketing* in 1976.

Henion and Wilson (1976) defined Locus of Control as "the degree to which a person is believed to have either internal or external control of his reinforcements." Henion and Wilson (1976) believed that there may be a definitive connection between Locus of Control and Kinnear et. al's (1972) conclusion that the Environmentally Concerned Consumer sees himself as being effective in abating pollution (PCE).

In the spring of 1975, Henion and Wilson (1976) instituted a questionnaire to 201 Austin, Texans. In his questionnaire, he utilized the Index of Environmental Concern (IEC), Perceived Consumer Effectiveness (PCE), and a Locus of Control scale (Henion and Wilson 1976).

The results revealed that PCE and IEC correlated with the internal dimension of the locus of control scale (Henion and Wilson 1976). Henion and Wilson (1976) states, "the results of the study suggest that the ECC segment of the consumer population might be receptive to product merchandising and advertising which recognizes that the ECC can by his own effort improve environmental quality. Moreover, our understanding of the attitude of Perceived Consumer Effectiveness has been considerably deepened by the present finding that the greater the ecological concern a person has, the more likely he is to have internal control of his reinforcements instead of external control of them."

Lewis R. Tucker, the author of "The Environmentally Concerned Citizen: Some Correlates," expands upon Henion's (1976) work by examining "the relationship between measures of internal-external control, social responsibility, social class, age, and income and environmental responsibility" (Tucker 1976). Tucker (1978) states that the "internal-external control of reinforcements refers to an individual's perception of rewards as being contingent on uncontrollable forces (external control) or directly attributable to personal action (internal control).

Tucker (1978) utilized a survey to compare members of the Sierra Club to members of the Audubon Society, and both groups to the general population. He proposed the following two hypotheses; one, "members of the Sierra Club and/or Audubon Society exhibit more positive environmentally responsible attitudes and behaviors than the members of the general population" and two, that "members of the Sierra Club and/or Audubon Society exhibit higher social responsibility scale scores and social class standing and income levels and lower internal-external control scale scores and age than the members of the general population" (Tucker 1978).

Tucker (1978) found that "consistency on the attitudinal and behavioral measures of environmental responsibility is more prevalent in the Sierra Club/Audubon Society group as opposed to the general population." Furthermore, "the general social responsibility correlates of internal-external control and social class were proven to be significant univariate and multivariate predictors of environmental responsibility, across all criterion measures" (Tucker 1978). Income was also revealed as a strong predictor; however, age was not (Tucker 1978).

Tucker (1978) concluded that "it would appear" based on his results, "that the intuitive as well as theoretical underpinnings of environmental responsibility are further developed through the external-internal control trait. More specifically, the hypothesis that individuals who undertake environmentally oriented activities perceive themselves as being in control of their life experience has been supported."

In November of 1981, Kent D. Van Liere and Riley E. Dunlap wrote "Environmental Concern: Does It Make a Difference How It's Measured, which revisited the issues of social and political ideology as well as the demographic correlates to environmental concern.

The study used data, which was obtained from a mail questionnaire of 806 Washington State residents during the spring and summer of 1976. The questionnaire utilized several measures of environmental concern which addressed such issues as population, pollution, and natural resources. The scales utilized in the study included, the Environmental Regulations Scale, the Environmental Spending Scale, and the Environmental Behavioral Scale. The demographic characteristics which were investigated in the study included age, sex, residence, education, and political ideology (Van Liere and Dunlap 1981).

Van Liere and Dunlap (1981) found that political ideology and education were "the strongest and most consistent correlates (that is, liberalism and education are positively related to environmental concern)." Additionally, they found that age was "generally supportive of past research" and found "women to be significantly more environmentally concerned than are men" (Van Liere and Dunlap 1981).

"Socially Responsible Consumer: Profile and Implication for Public Policy," written by John H. Antil and published in the *Journal of Macro Marketing* in the fall of 1984 was the result of a study to investigate and again expand upon the attitudinal and demographic characteristics of the socially responsible consumer.

Antil (1984) defines socially conscious consumption as "those behaviors and purchase decisions made by consumers that are related to environmental-resource problems that are motivated not only by a desire to satisfy personal needs, but also by a concern for the possible adverse consequences of their consequent effects."

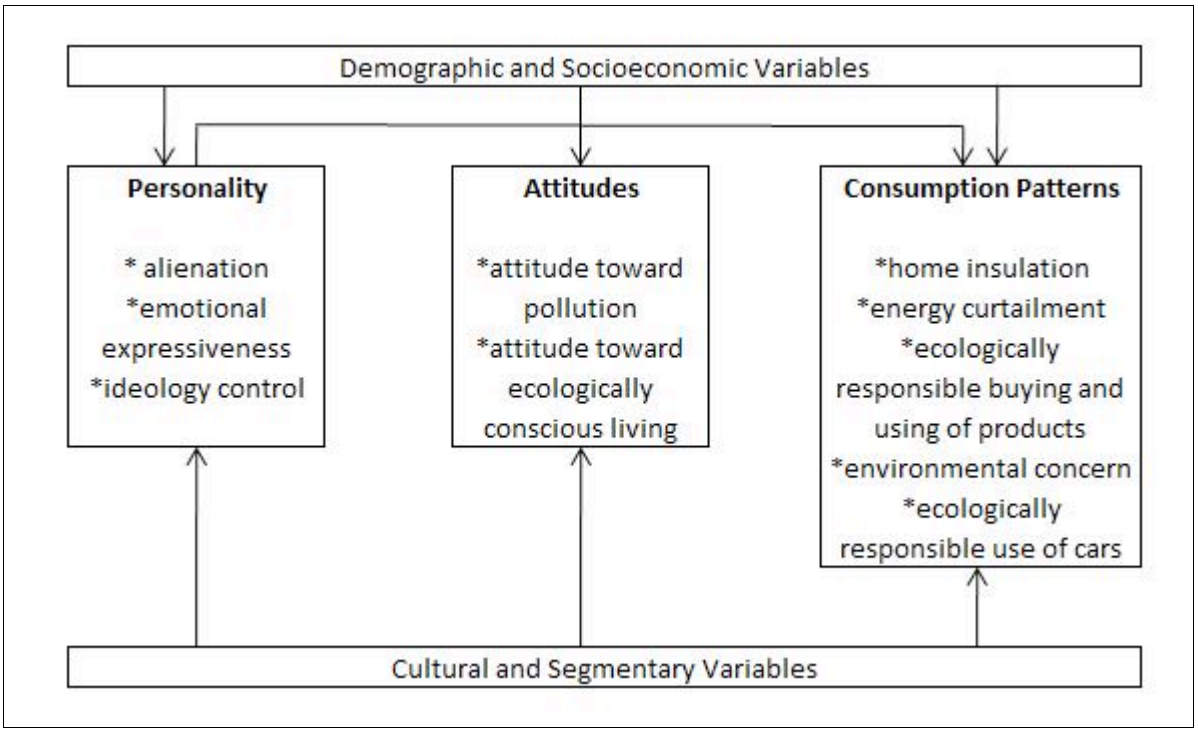
The data for the study was collected from 1000 members of the Market Facts, Inc. Consumer Mail Panel during June of 1977. The questionnaire consisted of a 40 item Socially Responsible Consumption Behavior scale, a psychographic analysis, as well as ten demographic variables (Antil 1984).

Regarding the demographic variables, Antil (1984) states that, "only population density was found to be significantly related to SR consumption. Household size, socioeconomic status, education (of respondent and spouse) and income were not shown to be related to SR consumption."

Antil (1984) however, did find a strong positive relationship between perceived consumer effectiveness (PCE) and SR consumption. Conservatism on the other hand showed a weak correlation to SR consumption (Antil 1984). Antil (1984) states that, "consumers in the high SR group appear to have a more liberal outlook on societal issues. They are more likely to be in favor of the women's liberation movement, more inclined to approve of the legalization of marijuana, and considerably less prejudiced towards those of a different race." Similar to PCE, environmental concern (EC) and knowledge concerning environmental-resource problems showed a strong correlation to SR consumers (Antil 1984).

"Personality Variables and Environmental Attitudes as Predictors of Ecologically Responsible Consumption Patterns," authored by Ingo Balderjahn, was published in the *Journal of Business Research* in 1988. Balderjahn (1988) developed a causal model to explain the various dimensions of the ecologically concerned consumer through demographic, socioeconomic, personality, and attitudinal variables. Figure 4 depicts the causal model (Balderjahn 1988).

Figure 4. A Causal Model of Ecologically Conscious Consumer Behavior.



(Balderjahn 1988)

The consumption pattern category of the model is particularly important to the present research for it is the first model within the body of knowledge that addresses specific building construction material use and activities to help identify ecologically concerned consumers (Balderjahn 1988).

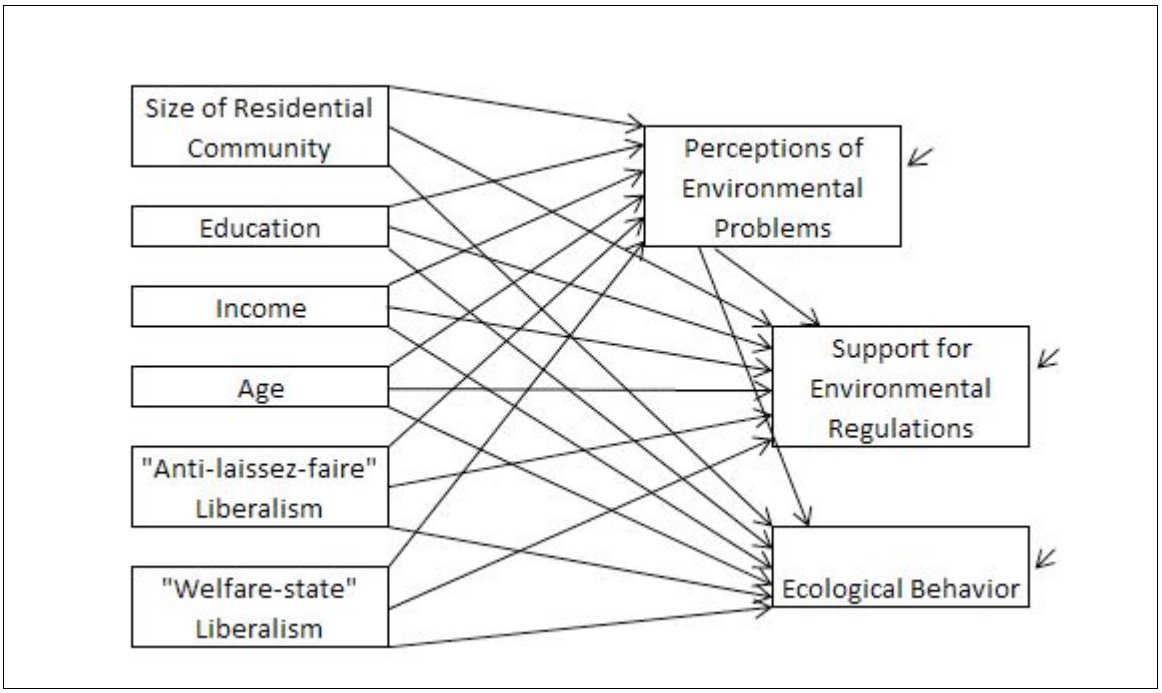
Balderjahn (1988) developed three hypotheses in which to test his model. The first hypothesis stated that the "ecologically concerned consumer is an internally controlled person who believes in people's power of changing perceived adverse social conditions" (Balderjahn 1988). The second hypothesis stated that "the attitude toward pollution and the attitude toward ecologically conscious living predict behavior" (Balderjahn 1988). The final hypothesis stated that "ecologically concerned consumers are better educated, younger, and have a higher income than the average consumer" (Balderjahn 1988). To test these hypotheses, data from a survey, which was conducted in the Federal Republic of Germany in 1980, was utilized. The survey represented 1,945 individuals (Balderjahn 1988).

The results of the study revealed that personality variables and attitudes do not affect home insulating behavior; however, the activity of insulating homes showed increase in relation to age, income, and better education (Balderjahn 1988). Additionally, insulating behavior is more prevalent in rural, as opposed to urban residences (Balderjahn 1988). Similarly, more energy is saved by "consumers with an internal control ideology" as well as in households "of more educated consumers" (Balderjahn 1988).

Balderjahn (1988) also reveals that "the more a consumer believes in the power of the individuals, the more they buy and use nonpolluting products." Surprisingly, "a positive attitude towards environmentally conscious living leads to a more to a more intensive use of nonpolluting products among men but non among women" where as the "effect of attitude toward ecologically conscious living on environmental concern is almost twice as high among men than among women" (Balderjahn 1988).

"Social Determinants of Environmental Concern: Specification and Test of the Model," written by Diane M. Samdahl and Robert Robertson [similar to (Balderjahn 1988)] sought to develop a causal model which outlined the demographic and liberal ideology which are determinants of environmental concern. Figure 5. The Proposed Causal Model of Determinants of Environmental Concern depicts Samdahl and Robertson's (1989) model.

Figure 5. The Proposed Causal Model of Determinants of Environmental Concern



(Samdahl and Robertson 1989)

To test the model, Samdahl and Robertson (1989) utilized data from a survey of Illinois residents in 1978. The survey was mailed to 12,000 residents and produced a response rate of 68.6% (Samdahl and Robertson 1989).

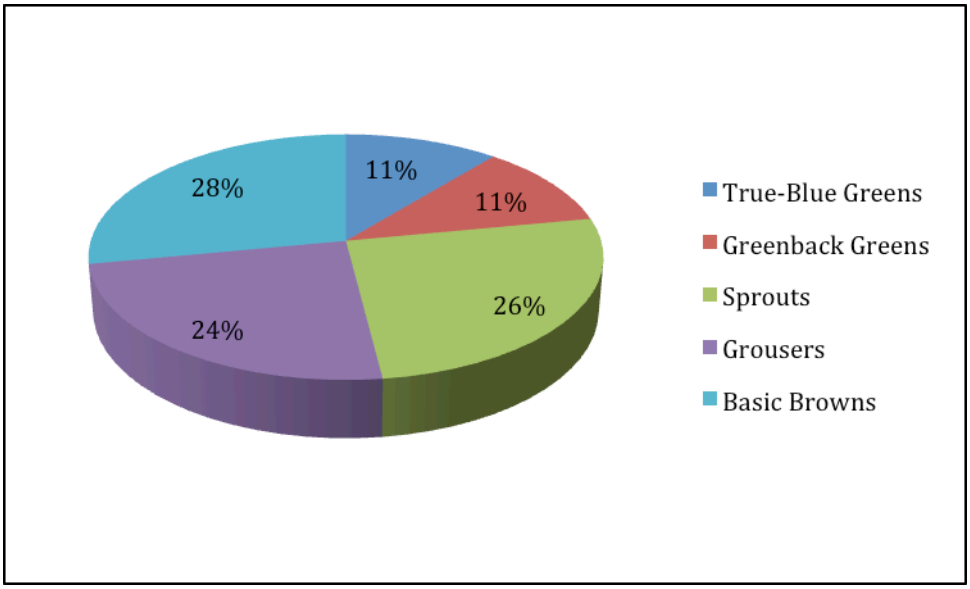
The study results revealed that residence, education, as well as perceptions of environmental problems do not predict ecological behavior and age does not predict perceptions of environmental problems (Samdahl and Robertson 1989). More so, income was "negatively associated with perceptions of environmental problems and support for environmental regulations" and with "perceptions of environmental problems, support for environmental regulation, and personal ecological behaviors" (Samdahl and Robertson 1989). Pro-regulatory liberalism ("anti-laissaz-faire liberalism) "significantly predicted support for environmental regulation, perceptions of environmental problems, and personal ecological behaviors" (Samdahl and Robertson 1989).

Two publications which further examine the attitudinal and demographic characteristics of ecologically conscious consumer behavior are "The Environment: Public Attitudes and

Individual Behavior" and "Environmental Behavior, North America: Canada, Mexico, and the United States. Both publications were the result of studies commissioned by S.C. Johnson and Son, Inc. "The Environment: Public Attitudes and Individual Behavior" was published in July of 1990. "Environmental Behavior, North America: Canada, Mexico, United States," which was published two years later, was an expansion of Roper (1990). Roper (1992) investigated the attitudinal and demographic changes surrounding ecologically conscious consumer behavior within the two year period between 1990 and 1992; including initial studies of the attitudinal and demographic characteristics of ecologically conscious consumers in Canada and Mexico (Roper 1992).

Roper (1990) divides Americans into five very different and distinct groups in regards to environmental attitudes and behaviors. The five groups include "True-Blue Greens", "Greenback Greens," "Sprouts," "Grousers," and "Basic Browns" (Roper 1990). The "True-Blue Greens" are described as the "environmental leaders and activists-by far the most involved in a wide range of pro-environmental practices. They are well educated, hold good jobs, and are rather affluent. Two-thirds of them are women, and a quarter are trendsetting Influential Americans" (Roper 1990). The "Greenback Greens" are described as the "environmental spenders-people willing to pay to improve the environment" (Roper 1990). They are classified as educated, around thirty years of age, and the most likely to have children of a young age (Roper 1990). The "Sprouts" are classified as the "middling swinging group whose attitudes and behavior can cut both ways…in most respects they are a portrait of Middle America" (Roper 1990). The "Grousers" are described as the individuals who are not very involved in environmental activities (Roper 1990). They are usually "less affluent and less well educated than average" (Roper 1990). The final group, known as the "Basic Browns," is known as the least involved of all groups (Roper 1990). They are also the most "disadvantaged of all the groups, in both financial and educational terms. They are disproportionately male and heavily concentrated in the South" (Roper 1990). Figure 6. Profile of Five Behavioral Segments depicts the percentage of each group represented in the United States (Roper 1990).

Figure 6. Profile of Five Behavioral Segments



(Roper 1990)

Additionally, each group of consumers within the United States has slightly different key characteristics. Table 2. The True-Blue Greens: Key Characteristics, Table 3. The Greenback Greens: Key Characteristics, Table 4. The Sprouts: Key Characteristics, Table 5. The Grousers: Key Characteristics, and Table 6. The Basic Browns: Key Characteristics; outline various major key characteristics of each group (Roper 1990).

Table 2. The True-Blue Greens: Key Characteristics

	True-Blue Greens	Total Public
Median Income	$32,100.00	$27,100.00
College Education	50%	41%
Executives/professionals	25%	16%
Influential Americans	26%	12%
Northeast and West	55%	41%
Large Urban Markets	51%	40%
Believe individuals can do a lot about air pollution from exhaust	57%	38%
Support Regulations requiring car pooling	55%	34%
Avoid buying products from companies not environmnetally responsible	54%	16%
Use biodegradable soaps and detergents	58%	24%
Environmental groups are a major information source	56%	32%

(Roper 1990)

Table 3. The Greenback Greens: Key Characteristics

	Greenback Greens	Total Public
Median income	$31,600.00	$27,100.00
College Education	54%	41%
Median Age	34	41
Have children under 13	43%	34%
Influential Americans	23%	12%
Liberals	29%	20%
Average price increase willing to pay for eight "green" products	20%	7%
Believe individuals can do a lot about "greenhouse" effect	33%	21%
Support regulations requiring new cars to run on alternative fuel	68%	47%
Say too busy to get around to make changes in lifestyle to help	59%	54%

(Roper 1990)

Table 4. The Sprouts: Key Characteristics

	The Sprouts	Total Public
Median income	$32,000.00	$27,100.00
College Education	53%	41%
Married	71%	62%
Male	48%	47%
Female	52%	53%
Conservatives	41%	39%
Middle-of-the-road	35%	37%
Liberals	21%	20%
Support regulations requiring household/personal care products in	75%	69%
Recycle newspapers regularly	42%	26%
Average price increase willing to pay for eight "green" products	5%	7%
Buy products made from or packaged in recycled material	15%	14%
Believe individuals can do a lot about air pollution from auto exhaust	40%	38%

(Roper 1990)

Table 5. The Grouser: Key Characteristics

	Grousers	Total Public
Median Income	$24,900.00	$27,100.00
High school education or less	69%	59%
Blue collar workers	31%	28%
Small Markets	18%	12%
Say companies, not people like myself, should solve these	88%	61%
Say too busy to get around to make changes	84%	54%
Say other people aren't making sacrifices	77%	42%
Recycle newspapers regularly	17%	26%
Average price increase willing to pay for eight "green" products	4%	7%
Say "I don't have the knowledge to understand environmental	57%	46%

(Roper 1990)

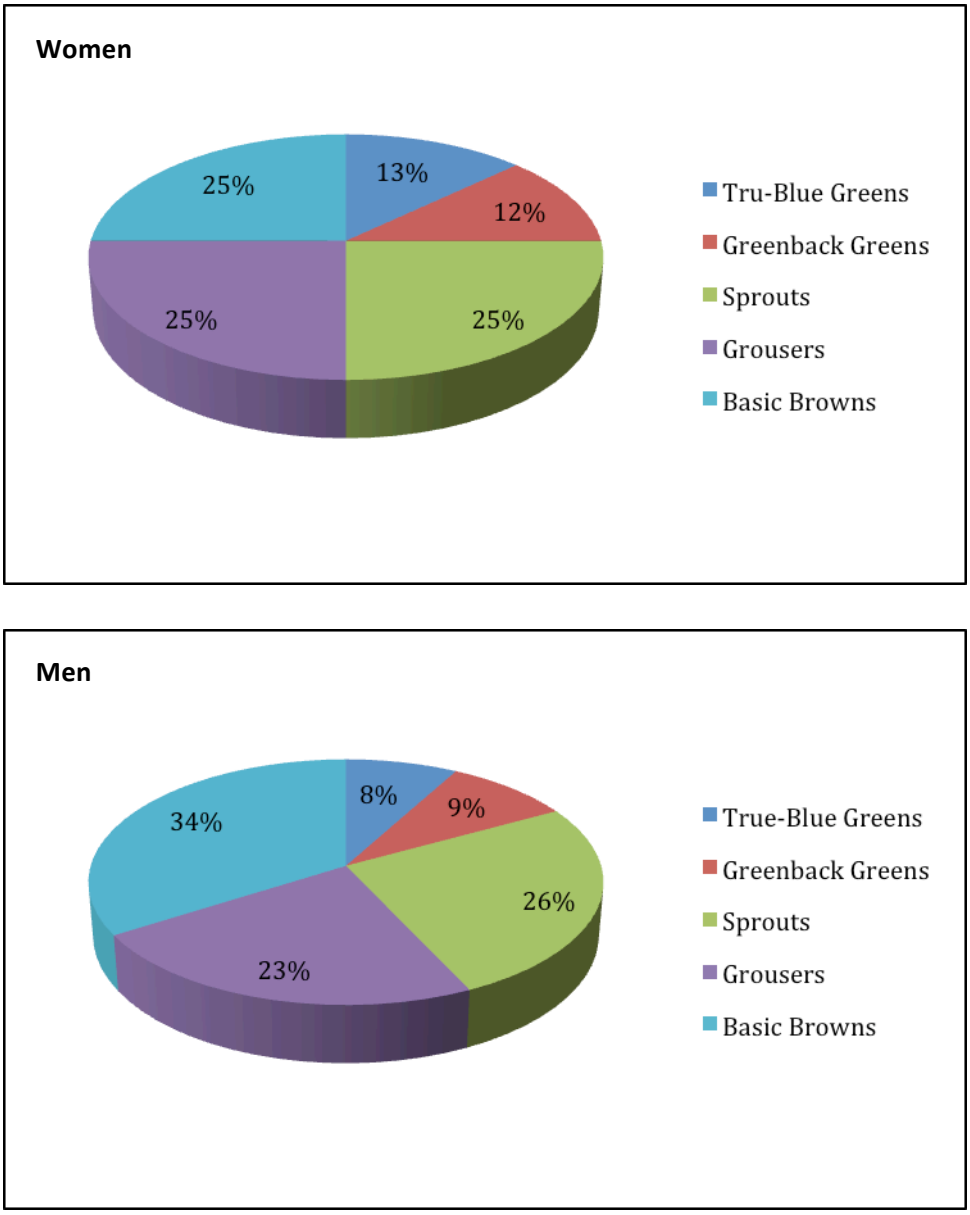
Table 6. The Basic Browns: Key Characteristics

	Basic Browns	Total Public
Median Income	$21,200.00	$27,100.00
High school education or less	69%	59%
Blue collar workers	36%	28%
South	48%	33%
Male	55%	47%
Buy products made from or packaged in recycled material	1%	14%
Average price increase willing to pay for eight "green" products	3%	7%
Believe individuals can do a lot about air pollution from auto exhaust	24%	38%
Support regulations forcing companies to comply with strict air pollution standards	43%	54%
Say newspapers are major source of information about the environment	58%	65%
Say "I don't have the knowledge to understand environmental problems"	55%	46%

(Roper 1990)

When examined further, women and men differed substantially in regards to the five segments in which they belong (Roper 1990). Figure 7. Five Segments of Consumers: How Women and Men Compare depicts the division between men and women amongst the five ecologically based behavioral segments (Roper 1990).

Figure 7. Five Segments of Consumers – How Women and Men Compare

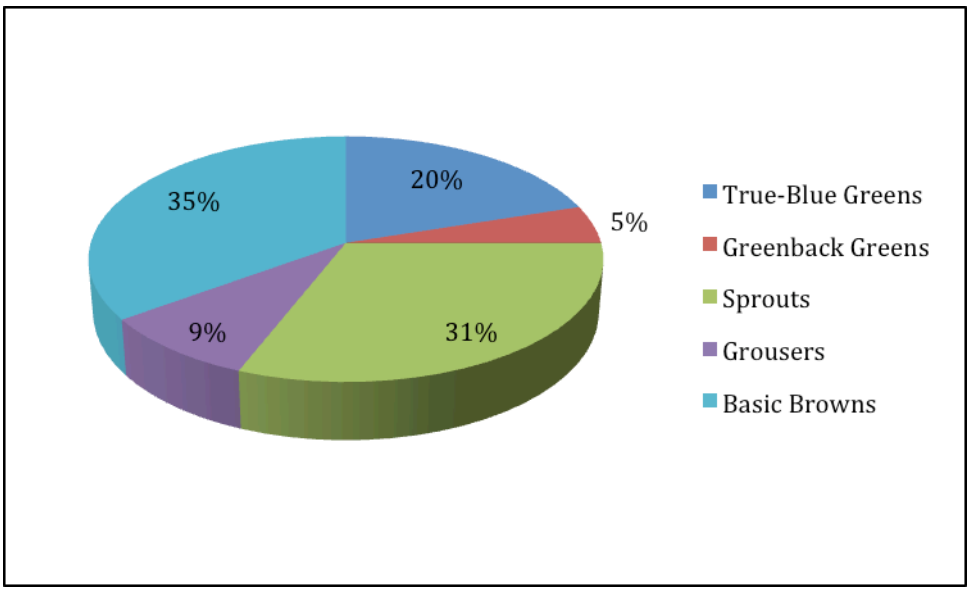


(Roper 1990)

Roper (1992) revealed that the attitudes and categorization of individuals within the five segments changed between 1990 and 1992. The data revealed that the United States shows signs of greening. The Roper (1992) study revealed a 9% increase in the True-Blue Greens category, a 6% decrease in the Greenback Greens category ("potential victim of recession"), a 5% increase in the Sprouts category, a 15% decline in the Grousers category, and a 7% increase in the Basic

Browns category (Roper 1990). Figure 8. Profile of the Five Behavioral Segments in North America, graphically represents the changes in each category from 1990 to 1992 (Roper 1992).

Figure 8. Profile of the Five Behavioral Segments in North America



(Roper 1992)

Although each category represents different demographic characteristics, the True-Blue Greens were significantly represented as predominately female, of higher median income earnings, higher educational attainment, executive or professional job classification, having full-time employment, married, and most likely to have children under the age of 13 (Roper 1992). Table 7. Demographic Composition of the Five Segments represents the demographic breakdown for the total public as well as the five behavioral segments (Roper 1992).

Table 7. Demographic Composition of the Five Segments

	Total Public	True-Blues	Green-backs	Sprouts	Grousers	Basic Browns
	%	%	%	%	%	%
Male	47	40	52	48	44	52
Female	53	60	48	52	56	48
Median Age	41	42	35	43	40	40
Median Income	28	34	33	30	27	20
Less than HS	19	10	11	14	17	33
HS Graduate	38	30	27	40	44	40
Some College	24	32	34	26	26	17
College grad. or more	18	27	29	20	13	10
Executive/prof.	16	23	24	17	15	10
White Collar	18	19	13	21	24	15
Blue Collar	26	20	30	24	26	30
Employed part-time	13	14	13	13	16	11
Employed full-time	48	49	54	49	50	45
Married	57	66	58	60	53	49
Single	43	34	42	40	47	51
Children under 13	34	39	37	30	36	33
Northeast	21	25	16	22	25	18
Midwest	25	27	22	26	21	25
South	33	25	31	27	30	46
West	20	23	31	25	23	11

(Roper 1992)

Other research published in 1992, included "Perceived Consumer Effectiveness and Faith in Others as Moderators of Environmentally Responsible Behaviors," written by Ida E. Berger and Ruth M. Corbin. This study sought to "examine the influence of perceived consumer effectiveness and faith in the effectiveness of others on the relationship between environmental concerns and behavioral intentions" (Berger and Corbin 1992).

Berger and Corbin (1992) utilized data from a July 1989 telephone survey, which included 1,521 responses from Canadian adults. The results of the survey revealed that "individuals who perceive themselves to be more efficacious have higher attitude-consumer behavior correlations than those who perceive less personal efficacy" (Berger and Corbin 1992). Furthermore, their "results provide strong support for the proposition that PCE moderates the degree of relationship between environmental attitudes and personal consumer behaviors" (Berger and Corbin 1992).

In conclusion, Berger and Corbin (1992) discuss that their results "support the notion that perceived consumer effectiveness is an important construct in the explanation of the relationship between environmental attitudes and personal consumer behaviors. An individual's self-perception of his or her efficacy in combating environmental problems clearly influences whether or not he or she will act on these environmental concerns in the consumer marketplace."

The final article which contributes to this body of knowledge is "Green Consumers in the 1990's: Profile and Implications for Advertising." This article and its corresponding research was authored by James A. Roberts and was published in the Journal of Business Research in 1996.

Roberts (1996) sought to reinvestigate the attitudinal and demographic correlates of ecologically conscious consumer behavior (ECCB). Roberts (1996) defines ecologically conscious consumers "as those who purchase products and services which they perceive to have a positive (or less negative) impact on the environment." The behavior being investigated is the act of purchasing products and services; which individuals perceive as having a positive (or less negative) impact on the environment. He developed several hypotheses in which to test. The first hypothesis stated that "perceived consumer effectiveness will positively affect the performance of ecologically conscious consumer behaviors" (Roberts 1996). The second

hypothesis stated that "a consumer's degree of liberalism will positively affect his or her performance of ecologically conscious consumer behaviors" (Roberts 1996). The third and final hypothesis stated that "environmental concern will positively affect the performance of ecologically conscious consumer behaviors" (Roberts 1996). Demographic information was collected to help develop an accurate profile of the ecologically conscious consumer (Roberts 1996).

Roberts (1996) utilized a survey of 1,503 randomly sampled adult consumers in the United States for data collection. The data results revealed that PCE, EC, and liberalism all showed a positive correlation to the performance of ecologically conscious consumer behaviors (Roberts 1996). Furthermore, the demographic data revealed a profile of the ecologically conscious consumer (someone who performs more ECCBs) as someone who is of older age, female, and surprisingly lower income (Roberts 1996). Additionally, a "significant relationship appeared between ECCB and one's level of education," although the relationship appeared to be weak (Roberts 1996).

Background Summary

Based upon the background research, there is inevitably a connection of perceived consumer effectiveness (PCE) (Kinnear et. al. 1974, Henion and Wilson 1976, Tucker 1978, Antil 1984, Balderjahn 1988, Berger and Corbin 1992, Roberts 1996) and ecological concern (EC) (Kassarjian 1971, Kinnear et. al. 1974, Van Lierre and Dunlap 1981, Antil 1984, Balderjahn 1988, Roberts 1996) to consumer actions known as ecologically conscious consumer behavior (ECCB) (Roper 1990, Roper 1992, Berger and Corbin 1992, Roberts 1996). Table 8 highlights the various attitudinal correlates and their connection to various behaviors and actions as discussed in the background literature.

The attitudinal correlation between social/political ideology to the attitudes of perceived consumer effectiveness, environmental concern, and ecologically conscious consumer behavior is well established as well. The background consensus within the research reveals a direct correlation between an individual's level of liberalism to their level of PCE, EC, and to their ECCB (Berkowitz and Lutterman 1968, Anderson and Cunningham 1972, Tognacci et. al. 1972, Dunlap 1975, Van Lierre and Dunlap 1981, Samdahl and Robertson, 1989, Roberts 1996).

The demographic correlates and descriptors of individuals with high PCE, EC, and who demonstrate ECCB appears inconsistent (Roberts 1996). To better categorize and analyze the background data surrounding demographic correlates, Table 9. Relationship of Background Demographic Data to Research Construct was developed. The table outlines historically critical research and relationships and describes the relationships between demographic categories and their research constructs (Roper 1996).

Table 8. Attitudinal Correlates and their Relationships/Connections

Study	Attitudinal Correlate	Relationship/Connection
Kassarjian 1971	Environmental Concern (EC)	Concern for Air Pollution
Kinnear et al. 1974	Perceived Consumer Effectiveness (PCE)	Related to Ecological Concern (EC)
	Ecological Concern (EC)	Related to Social Responsibility
Webster 1975	Perceived Consumer Effectiveness (PCE)	Related to Socially Conscious Consumer
Henion and Wilson 1976	Perceived Consumer Effectiveness (PCE)*	Related to Social Responsibility
Tucker 1978	Perceived Consumer Effectiveness (PCE)*	Related to Social Responsibility
Antil 1984	Perceived Consumer Effectiveness (PCE)	Related to Socially Responsible Consumer
	Environmental Concern (EC)	Related to Socially Responsible Consumer
Balderjahn 1988	Perceived Consumer Effectiveness (PCE)	Related to purchase and use of nonpolluting products
	Environmental Concern (EC)	Related to attitudes toward ecologically conscious living
Berger and Corbin 1992	Perceived Consumer Effectiveness (PCE)	Ecologically Conscious Consumer Behavior/Environmental Responsibility
Roberts 1996	Perceived Consumer Effectiveness (PCE)	Related to Ecologically Conscious Consumer Behavior
	Environmental Concern (EC)	Related to Ecologically Conscious Consumer Behavior

*Referred to as Internal Locus of Control

Table 9. Relationship of Demographic Correlates to Research Construct

Study[1]	Construct[1]	Sample[2]	Relationship/Correlation to Construct[3]			
			Age	Gender	Education	Income
Berkowitz and Lutterman 1968	Social Responsibility	734 Wisconsin residents	Negative	Female	Positive	Positive
Kassarjian 1971	Concern for Air Pollution	242 Santa Monica Residents	No Relation	No Relation	No Relation	No Relation
McEvoy 1972	Environmental Concern (EC)	1,503 United States Citizens	No Relation	Male	Positive	Positive
Tognacci et al. 1972	Environmental Concern	141 Boulder, Colorado Residents	Negative	No Relation	Positive	Not Studied
Anderson and Cunningham 1972	Socially conscious consumer	412 consumers from Austin, Texas	Negative	Not Studied	No Relation	No Relation
Kinnear et. al. 1974	Ecological Concern	500 Canadian consumer mail panel members	No Relation	Not Studied	No Relation	Positive
Webster 1975	Socially conscious consumer	231 New England small town residents	No Relation	Female	No Relation	Positive
Van Liere and Dunlap 1981	Environmental Concern	806 residents of Washington state	Negative	Female	Positive	No Relation
Antil 1984	Socially responsible consumer	690 Market Facts Consumer Mail panel members	No Relation	No Relation	No Relation	No Relation

Table 9. (Cont.) Relationship of Demographic Correlates to Research Construct

Study	Construct	Sample	Relationship/Correlation to Construct			
			Age	Gender	Education	Income
Balderjahn 1988	Ecologically Responsible Consumption Patterns	1,945 individuals from Germany	Positive	Not Studied	Positive	Positive
Samdahl and Robertson 1989	Environmental Concern	2,131 Illinois state residents	Positive	No Relation	Negative	Negative
Roper 1990	Ecologically conscious consumer behavior	United States citizens national sample	No Relation	Female	Positive	Positive
Roper 1992	Ecologically conscious consumer behavior	United States citizens national sample	No Relation	Female	Positive	Positive
Roberts 1996	Ecologically conscious consumer behavior	1503 United States citizens	Positive	Female	Positive	Negative

[1]Information taken from Roberts 1996

[2]Information taken from Roberts 1996 and modified based on study based information

[3]Information modified from Roberts 1996

As previously highlighted in Figure 3 and in the background literature, most research utilized or discussed such activities as recycling, insulating, energy curtailment, etc. as correlates of ECCB; and investigated the attitudinal and demographic characteristics of consumers who participate in such activities.

Recent and historical research has failed to reveal any studies which focus exclusively on the attitudinal and demographic correlates of consumers who adopt innovative sustainable and green construction materials and products.

This is interesting in the fact that it can be easily established that the purchase and/or use of innovative sustainable and green construction products can be categorized as Ecologically Conscious Consumer Behavior (ECCB) on the basis of their environmentally neutral or positive attributes.

Based upon this categorization; it can be implied, if the purchase and /or use of the innovative sustainable or green construction product is based upon its "positive or less negative impact" (Roberts 1996) on the environment (its ecological value and attributes), then these users should possess and exemplify the same attitudinal and demographic characteristics of the ecologically conscious consumer as outlined by the background literature.

The importance of such data can be argued on the basis of one's expectation that innovative sustainable and green building products will be no different than other products. However, sustainable and green building products have and continue to show increased consumer interest and have the potential to influence the expectations, goals, and needs of the construction industry. This reason alone deems such investigation relevant and necessary.

Research Hypotheses

Based upon the background literature, the following hypotheses have been developed and were tested by the current research:

Hypothesis 1:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will display high levels of perceived consumer effectiveness (PCE).

Hypothesis 2:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will display high levels of environmental concern (EC).

Hypothesis 3:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately represent a more liberal social ideology.

Hypothesis 4:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately represent a lower than average age-demographic.

Hypothesis 5:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately be of female gender.

Hypothesis 6:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately represent a higher than average household income.

Hypothesis 7:

Virginia consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately represent a higher than average level of educational attainment.

Methodology

Majority of the background research utilized survey instruments to investigate the attitudinal and demographic correlates of social responsibility, ecological concern, perceived consumer effectiveness and ecologically conscious consumer behavior. Surveys were utilized due to their simplicity and ease in which to collect information regarding values, attitudes and beliefs. Furthermore, survey instruments can be adapted to fit any human population, and in many forms can allow for anonymity (Robson 2002). For these very reasons, the utilization of a survey instrument appeared as the most flexible and appropriate tool in which to utilize for research regarding the attitudes and behaviors of ecologically conscious consumers.

Survey Strategy

The present research utilized a "tight pre-specification" in the questions utilized and the individuals surveyed. Due to "tight pre-specification," flexibility was unnecessary during the data collection stage. The survey instrument took the form of a fixed design (commonly referred to as a quantitative), single group, non-experimental strategy. Such an approach allowed for the sampling of individuals from the known population, the "measurement of a small number of variables" and the use of the hypotheses previously outlined (Robson 2002).

Survey Development

To test the hypotheses, the survey was developed to address the historical literature-based attitudinal and demographic correlates of ecologically conscious consumer behavior (ECCB) (Appendix B). The survey consisted of eight questions; which included two categorization questions, three attitudinal questions, and four demographic questions.

The first two categorization questions were designed to exclude respondents which fall outside the scope of the study. As previously highlighted; in Figure 2: Diffusion Theory of Consumers Surrounding Innovative Sustainable and Green Construction Products, the broader focus area and scope of the research is highlighted as being limited to the retail customer. Furthermore, this individual can be categorized as a "do-it-yourself" consumer, or end-user. Contractors often purchase products for the end user, thus are not the end user themselves. For this reason, it was

deemed necessary to eliminate contractors from the survey pool. In order to eliminate the use of data from contractors in the analysis, the following question was developed:

1) **Are you a contractor by profession?**
   A) Yes
   B) No

The second categorization question addressed the criteria of the purchase being based on the product's ecological attributes. Roberts (1996), states that "expressed concern does not translate directly into consumer behavior." To fully examine the attitudinal and demographic correlates of ecologically conscious consumer behavior, it was necessary to separate from analysis those purchases which could not be categorized as ECCB. To assist the respondent in better understanding ECCB, the definition as proposed by Roberts (1996) was utilized on the survey. The second categorization question read as follows:

Ecologically conscious consumers are defined as individuals who purchase products, which they perceive to have a positive (or less negative) impact on the environment.

Ecologically conscious consumer behavior (ECCB) is thus defined as the act of purchasing products which are perceived to have a positive (or less negative) impact on the environment.

2) **Would you categorize your purchase today as ecologically conscious consumer behavior?**
   A) Yes
   B) No

The first of the three attitudinal questions addressed the attitude of perceived consumer effectiveness (PCE), or the perception of an individual's ability to affect environmental and resource problems through their purchasing behavior. A Lickert scale numbered one through five (five point scale) was utilized to assess the individual's level of PCE. One is designated as low or not able to affect environmental/resource problems. Two is designated as medium-low ability to affect environmental/resource problems. Three is designated as medium ability to affect environmental/resource problems. Four is designated as medium-high ability to affect

environmental/resource problems, while five is designated as high ability to affect environmental and resource problems; through their purchasing behavior. The question read as follows:

3) **On a scale of (1) to (5), with (1) being the lowest and (5) being the highest; rate your ability as an individual consumer to affect environmental/resource problems.**

   (1) (2) (3) (4) (5)

The second of the attitudinal questions attempted to address the consumers' level of environmental concern (EC). Similar, to the first attitudinal question, the environmental concern question utilized a Lickert five-point scale, ranging from one through five, and low through high respectively. The question read as follows:

4) **On a scale of (1) to (5), with (1) being the lowest and (5) being the highest; rate your concern for the environment.**

   (1) (2) (3) (4) (5)

The third and final attitudinal question addressed social ideology. The question read as follows:

5) **Which of the following best describes your social ideology?**

   A) Liberal

   B) Conservative

The four demographic questions addressed age, gender, household income, and the educational attainment level of the respondents. The various answer categories were developed in accordance with and are modeled after the categories which are utilized by the U.S. Census Bureau. The questions respectively read as follows:

6) **Age**

A) 18-24

B) 25-44

C) 45-59

D) 60-74

E) 75+

7) **Gender**

A) Male

B) Female

8) **Household Income**

A) Less than $15,000

B) $15,000-$34,999

C) $35,000-$74,999

D) $75,000-$149,999

E) $150,000+

9) **Please circle the highest educational level you have completed.**

A) Less than High School

B) High School Degree (Includes Equivalency)

C) Some College/Associates Degree/Trade School

D) Bachelors Degree

E) Graduate or Professional Degree

Survey Population

Since one of the objectives of the research was to conduct a survey of innovative sustainable and green construction materials and product consumers, it was decided to avoid large "big-box stores" such as Home Depot and Lowe's; and focus on clients of stores which provide their customers with exclusively sustainable and green construction products and services. This methodology eliminated the necessity to monitor the stores during survey times, in order to identify consumers of sustainable and green building products. Furthermore, it was concluded that each individual within the geographical location of the exclusively sustainable and green building product store had an equal opportunity to shop at a Home Depot, Lowes, or the alternative third store.

Although this highly specialized and unique type of retail store is on the rise in the United States, the number of such stores currently in operation within Virginia is limited. After an extensive search of stores throughout different geographical locations within the state, two exclusively sustainable and green construction retailers arose and were found to be suitable sites in which to conduct the survey. A third store was chosen in an attempt to broaden the geographical as well as potential demographic make-up of the population. By broadening and expanding the number of stores as well as the geographical locations where the survey was conducted, the broadest and most diverse potential survey and sustainable/green consumer population within Virginia was established. The three stores included Eco Supply, Nature Neutral, and a single Habitat for Humanity Restore.

Eco Supply is located at 1310 Roseneath Rd. in the city of Richmond, VA. Eco Supply specializes in sustainable and green construction products and materials as well as environmentally friendly and sustainable furniture and architectural products. Nature Neutral is located at 370 C Greenbriar Drive, in the city of Charlottesville, VA. Nature Neutral specializes in sustainable and green construction products and materials. Both stores are known to service clients throughout the State of Virginia as well as clients across the eastern United States by providing products through their internet and web based showrooms. The third store chosen was the Habitat for Humanity Restore, located at 403 Salem Avenue in Roanoke, VA. Habitat for Humanity Restore in Roanoke, VA specializes in offering recycled and reclaimed construction products and materials to its customers. Habitat for Humanity provides an important sustainable

and green service by providing both donation and resale opportunities to its customers, thus limiting the amount of waste from construction sites which would otherwise find its way to Virginia's landfills. A detailed description of each store is highlighted in the Appendices section as Appendix C.

Survey Protocol

Each store was individually contacted to obtain approval and permission regarding their participation in the research study. Upon acceptance to participate, each store was instructed on the proper protocol in which to distribute the survey. The number of surveys was limited to a total of 300, with 100 surveys being placed at each individual store. It was deemed that this number was suitable for the period of time of survey distribution, based on sales volume information. Each store was instructed to begin the survey distribution process on the morning of Monday, June 2, 2008. Each customer purchasing a product at the point-of-purchase would be handed a survey, to be completed at their own leisure and discretion. Once completed, each respondent placed the completed survey in the pre-addressed envelope, which was subsequently mailed to the principal investigator of the research (Appendix D).

Due to the rather erratic and diverse fluctuation in the volume of clients shopping at each store, it was predetermined to limit the survey distribution period to a total duration of two months. The survey distribution process was terminated at the closing time of each store on the afternoon of Thursday, July 31, 2008

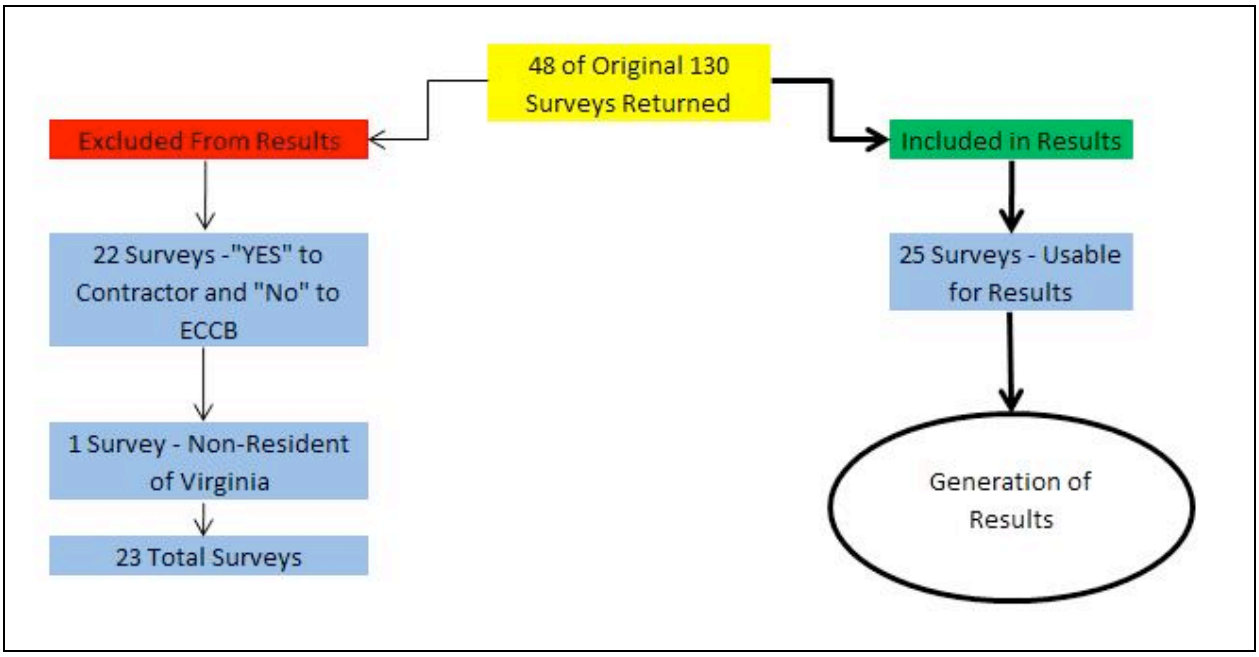
Results

Response Rate

Each store was originally supplied with 100 surveys (a total of 300 surveys) in which to distribute over the two-month distribution period. Of those 300 surveys, 130 were distributed during the two-month distribution period; for a total of 43.3% of the surveys having been successfully distributed to customers. Of the 130 surveys, 48 surveys were returned to the principle investigator, equating to a response rate of 36.9%.

After review of the first two categorization questions (*Are you a contractor by profession?* and *Would you categorize your purchase today as ecologically conscious consumer behavior?*), 23 (48%) of the original 48 surveys were excluded from the results. 22 of the 23 excluded surveys were excluded on the basis of the respondent answering *yes* to the first categorization question or *no* to the second categorization question. One of the 23 excluded surveys was excluded on the basis of the respondent residing outside of the state of Virginia, the geographical location and scope of the research study. The final total of usable surveys equaled 25, or 52% of the original 48 returned surveys (See Figure 9).

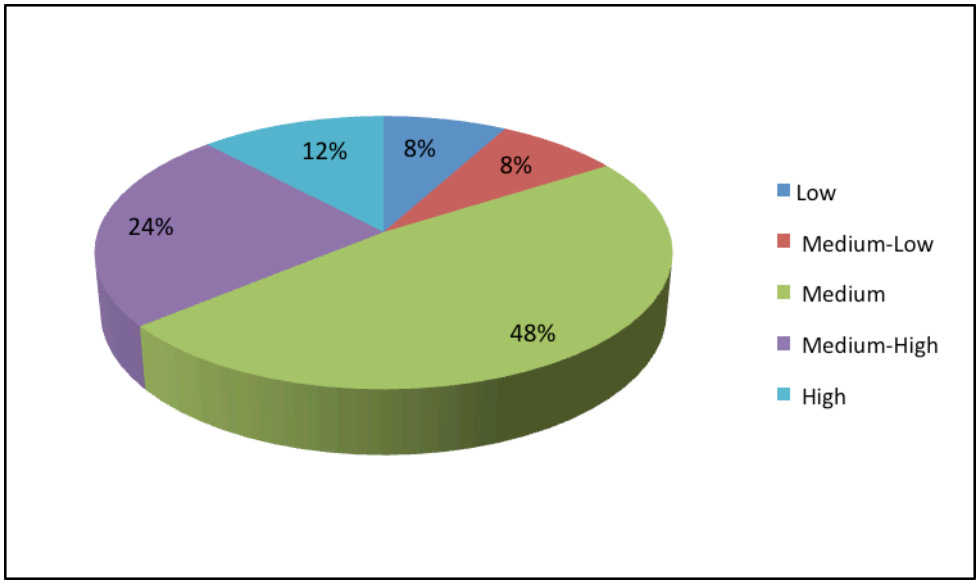
Figure 9. Data Filtering Diagram



Perceived Consumer Effectiveness

When asked to rate their ability as consumers to affect environmental/resource problems, answers averaged 3.24 on the scale of 1 to 5. The results clearly show however a positive direction towards the higher rates of perceived consumer effectiveness in consumers who perform ecologically conscious consumer behavior. Respondents who answered 1 (low or no ability) and 2 (medium-low ability) totaled 8% respectively. Respondents who answered 3 (medium ability) totaled 48%. Respondents who answered 4 (medium-high ability) totaled 24%, while respondents answering 5 (high ability) totaled 12%. 84% of the total survey population rated their ability as consumers to affect environmental/resource problems as medium or higher. Figure 10. Perceived Consumer Effectiveness Results, graphically displays the results to the perceived consumer effectiveness survey question.

Figure 10. Perceived Consumer Effectiveness Results



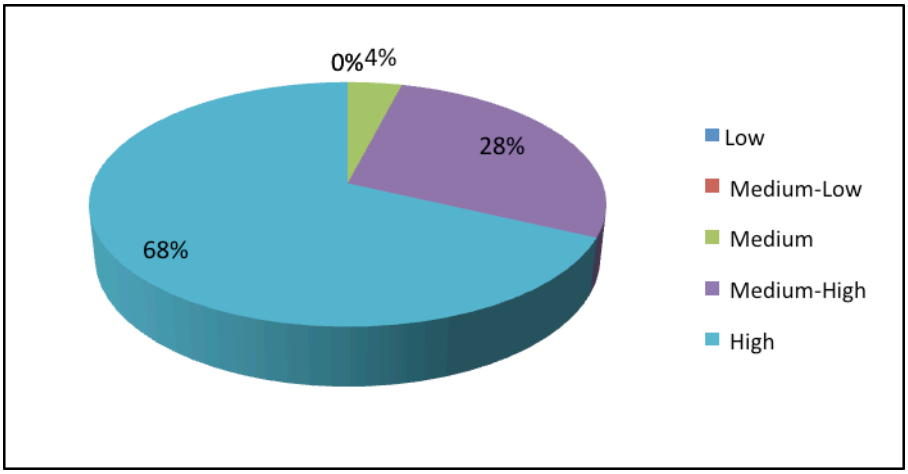
Based upon these results, Hypothesis 1 [Consumers, who identify their behavior as ecologically conscious consumer behavior (ECCB), will display high levels of perceived consumer effectiveness (PCE)] is supported (See Table 10).

Environmental Concern

When consumers was asked to rate their concern for the environment, answers averaged 4.64 on the scale of 1 to 5. The results show a strong positive correlation and direction towards high

rates of environmental concern in consumers who perform ecologically conscious consumer behavior. None of the respondents answered below 3 (medium concern). 4% of respondents answered 3 (medium concern). 28% of respondents answered 4 (medium-high concern), while 68% of respondents answered 5 (high concern). Figure 11. Environmental Concern Results, graphically displays the results of the environmental concern survey question.

Figure 11. Environmental Concern Results

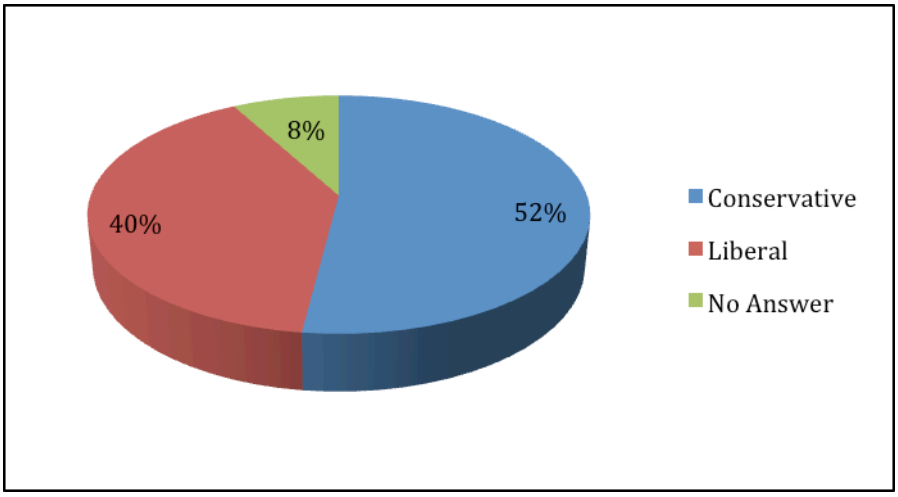


Based upon these results, Hypothesis 2 [Consumers, who identify their behavior as ecologically conscious consumer behavior (ECCB), will display high levels of environmental concern (EC)] is supported (See Table 10).

Social Ideology

When consumers were asked to identify which best described their social ideology, 52% of respondents answered conservative, 40% answered liberal, and 8% gave no answer. Figure 12. Social Ideology Results, graphically displays the results of the social ideology survey question.

Figure 12. Social Ideology Results

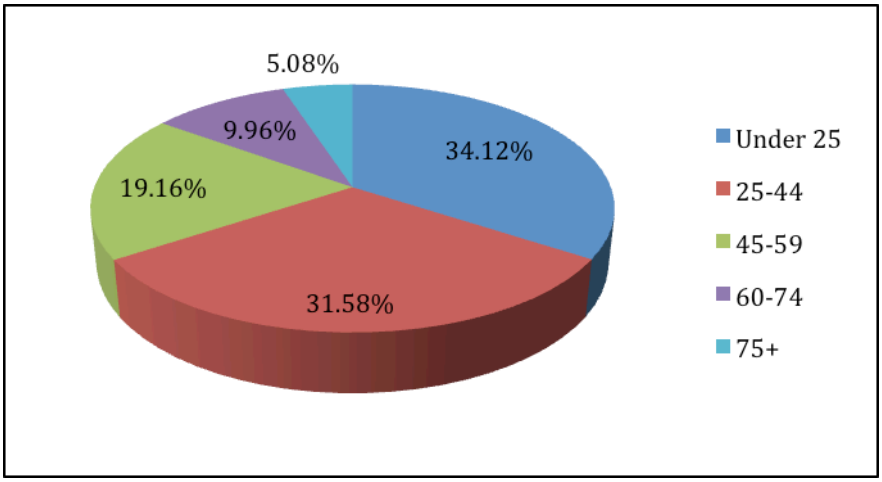


Based upon these results, Hypothesis 3 [Consumers, who identify their behavior as ecologically conscious consumer behavior (ECCB), will predominately represent a more liberal social ideology] is not supported (See Table 10).

Age

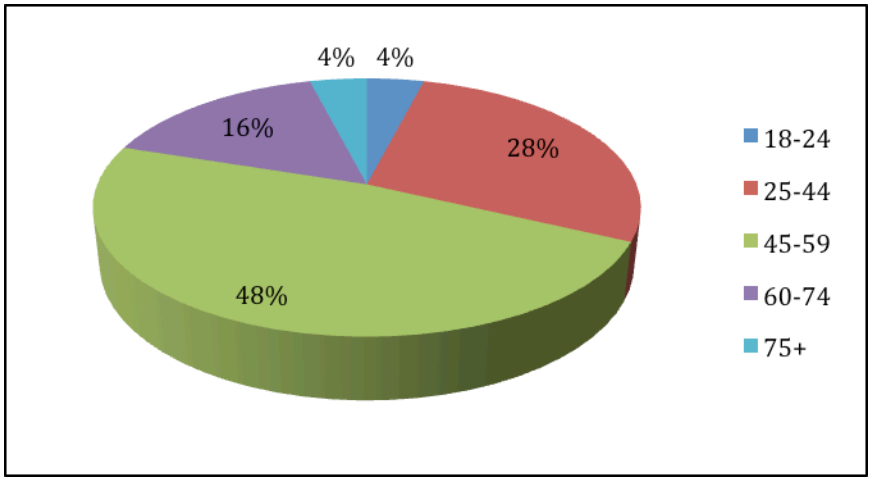
The total population of VA in 2000 equaled 7,086,015. Of those 34.12% were under the age of 25, 31.58% were between the ages of 25 and 44, 19.16% were between the ages of 45 and 59, 9.96% were between the ages of 60 and 74, and 5.08% were 75 years of age or older (US Bureau of Census, 2000). Figure 13. Virginia Age Demographic, graphically represents the percentages of each age category within the State of Virginia in the year 2000.

Figure 13. Virginia Age Demographic



The age of the consumers, who identified their behavior as ecologically conscious consumer behavior, was much higher overall as compared to the percentages of Virginia collectively. 4% of the respondents were between the ages of 18 and 25. 28% of the respondents were between the ages of 25 and 44. 48% of respondents were between the ages of 45 and 59. 16% of respondents were between the ages of 60 and 74, and 4% of respondents were 75 years old or older. These percentages clearly show a higher than average age demographic of the consumers poled, particularly with the lower percentages in the 18-24 and 25-44 categories, and the higher percentages in the 45-59 and 60-74 categories. Figure 14. Age Results, graphically represents the age demographic of the survey respondents and the age results.

Figure 14. Age Results

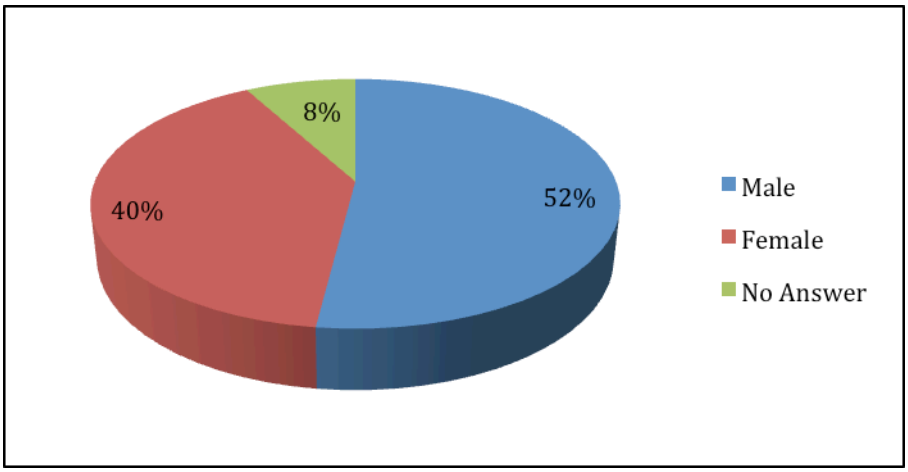


Based upon these results, Hypothesis 4 [Consumers, who identify their behavior as ecologically conscious consumer behavior (ECCB), will predominately represent a lower than average age-demographic] is not supported (See Table 10).

Gender

When consumers were asked to identify their gender, 52% identified male, 40% identified female and 8% did not answer the survey question. Figure 15. Gender Results, graphically represents the results of the sex survey question.

Figure 15. Gender Results

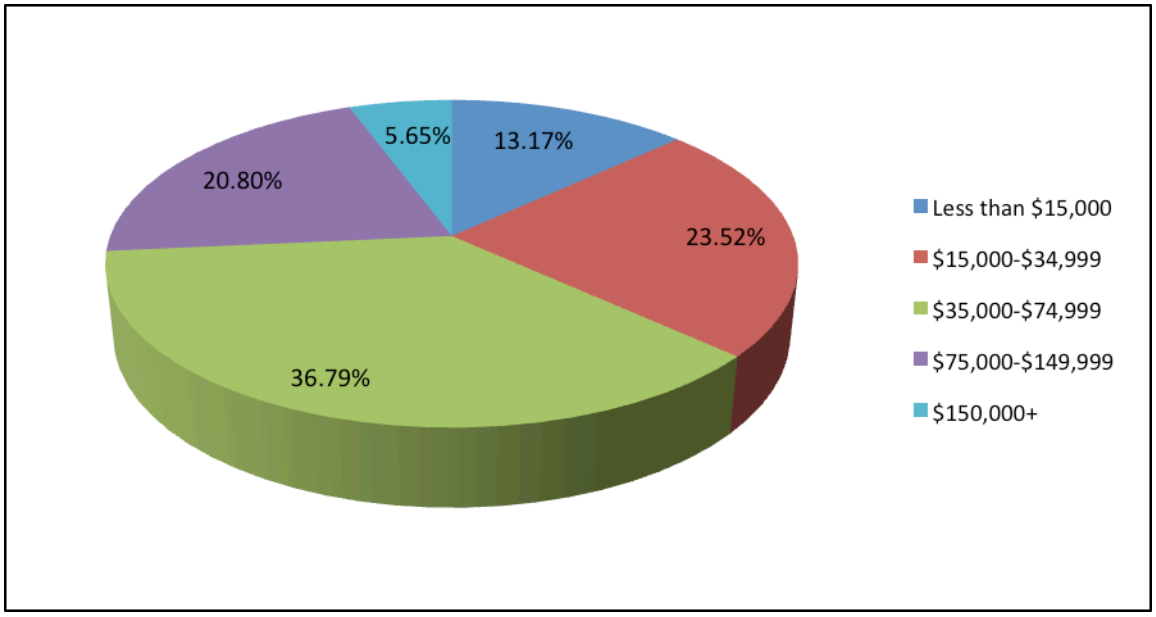


Based upon these results, Hypothesis 5 [Consumers, who identify their behavior as ecologically conscious consumer behavior (ECCB), will predominately be of female gender] is not supported (See Table 10).

Income

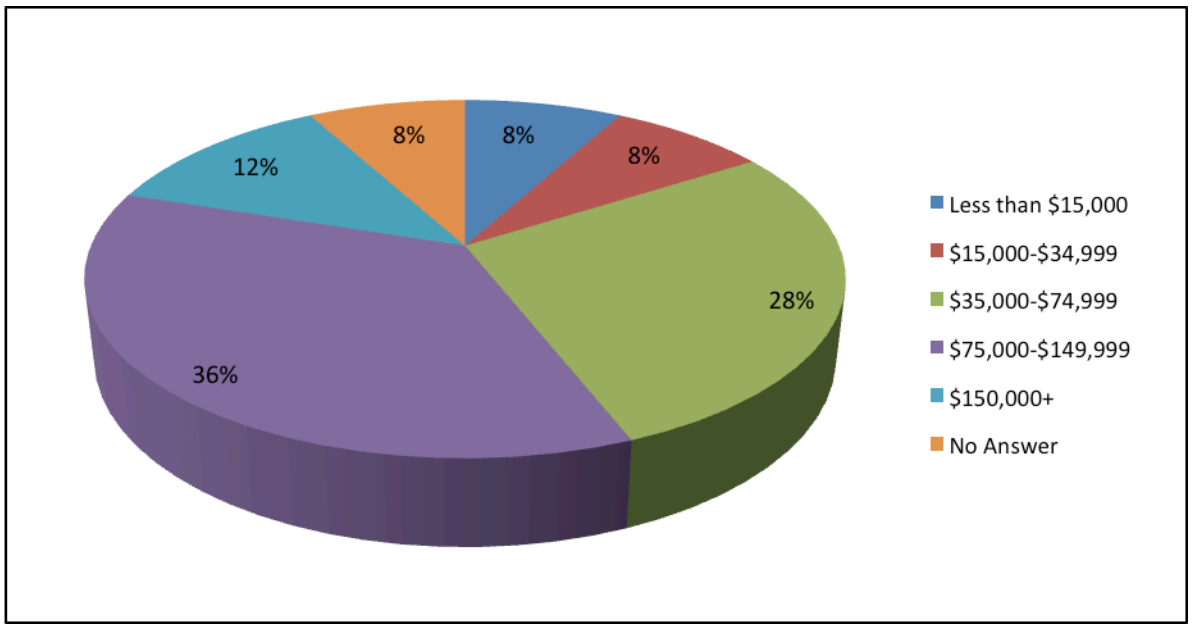
Within Virginia, 2,702,835 households exist. 13.17% of those households earn less than $15,000 per year. 23.52% of households earn between $15,000 and $34,999. 36.79% of households earn $35,000 to $74,999. 20.80% of households earn $75,000 to $149,999, while 5.65% of households earn $150,000 or more (US Bureau of Census, 2000). Figure 16. Virginia Household Income, graphically displays this data.

Figure 16. Virginia Household Income



The income of the consumers' households, who identified their behavior as ecologically conscious consumer behavior, was much higher overall when compared to the percentages of Virginia households collectively. 8% of respondents stated a household income of less than $15,000. 8% of respondents stated a household income of $15,000 to $34,999. 28% stated a household income of $35,000 to $74,999. 36% stated a household income of $75,000 to $149,999, while 12% stated a household income of $150,000 or more. 8% of respondents gave no answer to this question. Figure 17. Income Results, graphically represents the results of the income survey questions.

Figure 17. Income Results

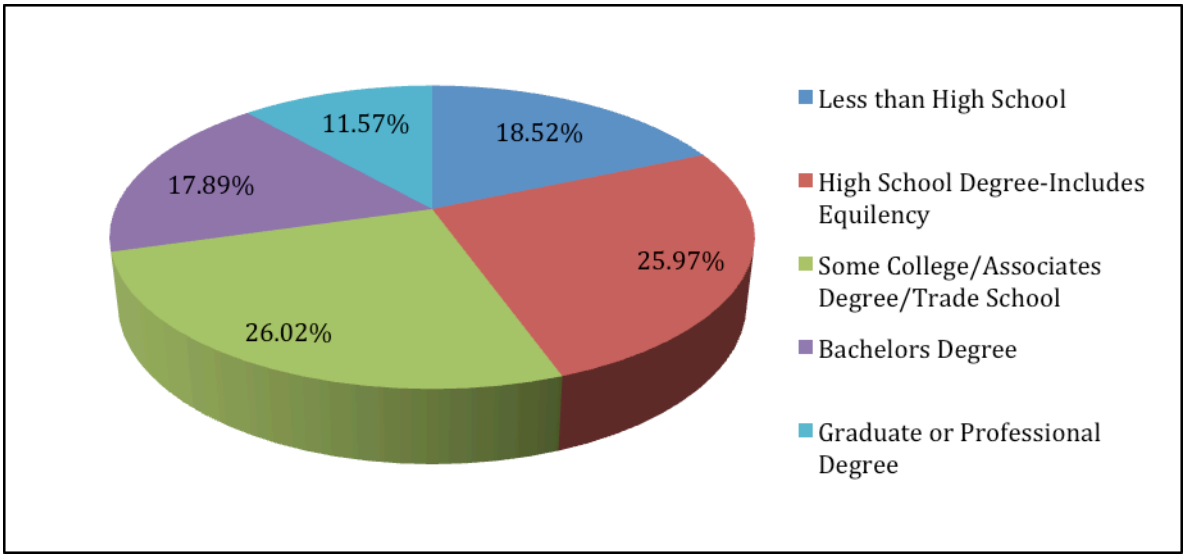


Based upon these results, Hypothesis 6 [Consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately represent a higher than average household income] is supported (See Table 10).

Educational Attainment

The total Virginia population that is 25 years of age or older is 4,669,099. Of this total, 18.52% have less than a high school education. 25.97% have obtained a high school degree or its equivalency. 26.02% have completed some college, obtained an Associates degree, or have completed trade school. 17.89% have a Bachelors degree and 11.57% have obtained a graduate or professional degree. Figure 18. Virginia Educational Attainment graphically represents the level of educational attainment for Virginia residents collectively.

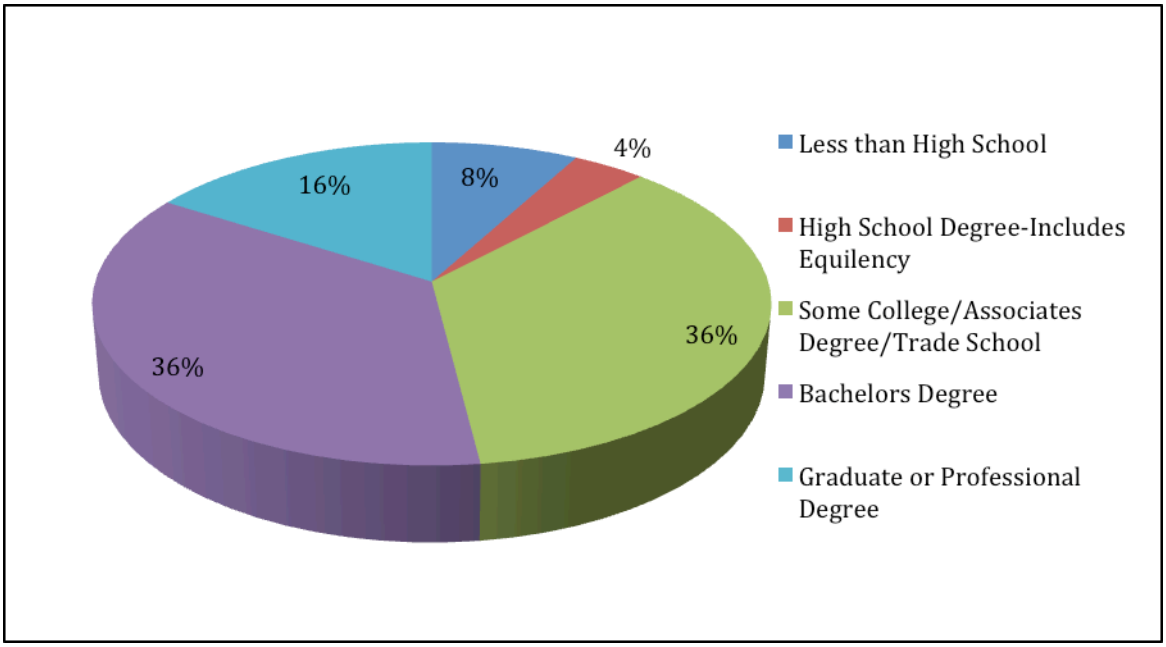
Figure 18. Virginia Educational Attainment



The educational attainment of the consumers' who identified their behavior as ecologically conscious consumer behavior was much higher overall when compared to the percentages of Virginia residents collectively. Respondents with an educational attainment of Less than High School and High School Degree-Includes Equivalency were substantially lower, while Some College/Associates Degree/Trade School, Bachelors Degree, and Graduate or Professional Degree attainment was substantially higher.

8% of respondents have less than a high school education. 4% have a high school education or equivalent. 36% have some college, and associates degree, or trade school education. 36% have a Bachelors degree while 16% of respondents have a graduate or professional degree. Figure 19. Educational Attainment Results, graphically represents these results.

Figure 19. Educational Attainment Results



Based upon these results, Hypothesis 7 [Consumers who identify their behavior as ecologically conscious consumer behavior (ECCB) will predominately represent a higher than average level of educational attainment] is supported (See Table 10).

Table 10. Hypotheses Results Summary

Hypothesis #	People Partaking in ECCB Will Exhibit	Supported/Rejected
1	High Levels of PCE	1
2	High Levels of EC	1
3	Liberal Social Ideology	0
4	Lower Age Demographic	0
5	Female Gender	0
6	Higher Household Income	1
7	Higher Levels of Educational Attainment	1

0=Rejected
1=Supported

Discussion and Conclusion

The contributions of this research study were the investigation of the attitudinal and demographic correlates of Virginia consumers of innovative sustainable and green construction products and materials, who identify their purchasing as ecologically conscious consumer behavior.

With the relatively outdated research coupled with the growth of an extensive green and sustainable movement and the increase in manufacturing, marketing, retail, and sales of innovative sustainable and green construction products; the present research aimed to reinvestigate the profile of attitudinal and demographic correlates of ecologically conscious consumer behavior which may have changed, redeveloped, or be unique to sustainable and green construction products.

The present research showed strong relationships between perceived consumer effectiveness, environmental concern, and acts of ecologically conscious consumer behavior. The attitudinal correlate of social ideology and the demographic correlates presented themselves as less predictive in categorizing consumers who participates in ecologically conscious consumer behavior.

Although perceived consumer effectiveness played a role is defining consumers of ECCB, ecological concern emerged as a much more critical and conclusive attitudinal correlate to ECCB. Apparently, there is a strong concern for the environment, but only a moderate and indecisive attitude in consumers to feel that their purchases will make a difference through positively affecting the environment.

The attitudinal and demographic correlates revealed surprising results in the categories of social ideology, age, and sex. Inconsistent with most past research, ECCB groups emerged as predominately containing conservative, male individuals of median to upper age. Consistent with past research, it revealed that consumers performing ECCBs have high levels of education attainment and high levels of income. Such results could indicate a demographic profile unique to Virginia residents or that marketing, recent media coverage, and the overall green and sustainable movement is transcending social, age, and gender lines. With such historically

sporadic results and potential present validity issues regarding demographic correlates, such results are deemed unreliable and inconclusive. In conclusion as with past research, the current research study showed that attitudinal correlates are better predictors of ECCB than demographic correlates. It is the recommendation of the principal investigator that attitudinal correlates should be actively utilized and incorporated into a well rounded marketing strategy of innovative sustainable and green building products.

Validity

As with all research the question of validity can arise once results are analyzed. While analyzing the results of the present research, there appears to be potential mediator factors which could have influenced some of the demographic correlates. The two demographic correlates which raise concern in regards to mediator factors are the categories of age and gender. Furthermore, there is a recognized potential validity issue surrounding the single group survey design and methodology.

Age, as highlighted by Table 8 and the background research, reveals mixed results as to the age demographic of consumers' who participates in ECCBs. The present research revealed a moderate to higher age demographic when compared to Virginia age demographics. A mediator for this sway to a higher age demographic could be the relationship between age and home ownership. Lower age categories usually coincide with lower levels of home ownership while higher age categories usually coincide with higher levels of home ownership. Understandably, those individuals who own homes are more likely to participate in repair and remodeling activities and thus are more likely to participate in the purchase of sustainable and green building products. Based upon this realization, the age results could be more reflective of home ownership within the survey population rather than ECCB.

Gender, as highlighted by Table 8 and the background research, reveals mixed results with a moderate sway towards the female demographic regarding who participates in ECCBs. The present research revealed a male dominated participation in ECCB. A mediator for these results very well could be the relationship between gender and traditional social and family structure or roles. When past research was reviewed for such a connection, it was found that studies which utilized domestic related products such as soap, detergents, and home products; the results

favored the female demographic. The male acting in a traditional social and family structure or role could be acting in the role of purchaser for construction related products for the home. Based upon this realization, the gender results could be more reflective of traditional social and family structure and role influence within the survey pool rather than ECCB.

The single group design methodology utilized the sampling of a single group (participants of ECCB) and comparing those individuals to the general population of Virginia. A potential validity issue arises here in the fact that the results of the study compared consumers participating in ECCB and comparing those individuals to Virginia's general population as opposed to comparing the identified ECCB consumer to the more general building construction material and product consumers within Virginia.

Future Research

Due to the present study's findings, much is still to be learned about innovative, sustainable and green building product diffusion theory. Further research would greatly benefit and expand upon the understanding of the apparently high environmental concern, but only moderate level of perceived consumer effectiveness.

Furthermore, much research is needed to better understand the influence of mediator factors affecting the demographic correlates of innovative sustainable and green building product use. The extent of this relationship is relative unknown or unexplored by the present as well as past research within the background body of knowledge.

The timing of the study, which took place during the summer months of June and July of 2008 could have played a significant role in the results. The purchase of either innovative sustainable, as well as traditional products can be highly influenced by the seasons (higher purchase of insulation products in winter, etc.). Future research investigating the impact of seasonal purchase behavior would add greatly to the current foundation of the present study.

Additionally, the present research's methodology and findings could aid in future research within Virginia, outside of the State of Virginia as well as globally. Future research comparing the ECCB consumer to the general building construction products and materials consumer would be greatly beneficial. Collectively, this incorporation of such information resulting from broader

studies of ECCB could help aid in the development, marketing, and consumer buy-in of innovative sustainable and green products.

Lessons Learned

Three major lessons were learned during the present research study. First and foremost, mediator factors can and will play an active role in influencing the results of any study. Such factors should and must be actively controlled for when they present themselves as significant factors which could affect the study.

Second, unlike other social and psychological arenas, demographic correlates can be inconsistent and potentially misleading in regards to innovative sustainable and green building products and ECCB. Considerations to their validity and strength should always be accounted for in a study which actively investigates the correlation between them and acts of ecologically conscious consumer behavior.

Third, valid and clear communication can assist in assuring a strong response rate. After the study was completed and the response rate became known, the principal investigator questioned the number of in-store customers with the president of each company to clarify personal concerns surrounding a lower than expected response rate. At that time it was communicated to the principal investigator that a substantial amount of sales from two of the stores were conducted via internet sales platforms, information which was not made known previously to the investigator. Such information, if communicated before the beginning of the survey response period, could have allowed for the development of secondary or alternate survey tools, which examined beyond in-store sales in an attempt to reach a broader survey pool, thus potentially increasing the response rate of the study.

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Appendix A

Study	Construct	Sample	Views, Behaviors, or Products Studied (In Relation to Construct)
Berkowitz and Lutterman 1968	Social Responsibility	734 Wisconsin Residents	Generally Based Socially Responsible Actions
Kassarjian 1971	Concern for Air Pollution	242 Santa Monica Residents	Actions Surrounding an Innovative Gasoline with F310 Additive
McEvoy 1972	Environmental Concern (EC)	1,503 United States Citizens	Periodical/Article Circulation Containing Literature of an Environmental Nature
Tognacci et al. 1972	Environmental Concern (EC)	141 Boulder, Colorado Residents	General Environmental Goals and Specific Environmental Attitudes
Anderson and Cunningham 1972	Socially Conscious Consumer	412 Consumers from Austin, Texas	General Consumer Actions
Kinnear et al. 1974	Ecological Concern	500 Canadian Consumer Mail Panel Members	General Purchasing Behavior or Actions which Represent Maintenance of Ecological System
Webster 1975	Socially Conscious Consumer	231 New England Small Town Residents	Recycling
Dunlap 1975	Environmental Concern (EC)	237 University of Oregon Liberal Arts Students	General Environmental Behaviors or Actions
Henion and Wilson 1976	Environmental Concern (EC)	201 Austin, Texans	General Environmental Attitudes and Actions
Tucker 1978	Environmental Concern (EC) and Social Responsibility	Members of the Sierra Club and Audubon Society	General Environmental and Socially Responsible Attitudes and Behaviors or Actions
Van Liere and Dunlap 1981	Environmental Concern (EC)	806 Residents of Washington State	General Environmental Behaviors or Actions

Antil 1984	Socially Responsible Consumer	690 Market Facts Consumer Mail Panel Members	General Socially Responsible Consumption or Actions
Balderjahn 1988	Ecologically Responsible Consumption Patterns	1,945 Individuals from Germany	Insulating Homes and General Environmental Behaviors or Actions
Samdahl and Robertson 1989	Environmental Concern (EC)	2,131 Illinois State Residents	General Ecological Behaviors or Actions
Roper 1990 and 1992	Ecologically Conscious Consumer Behavior (ECCB)	United States Citizens National Sample	General Ecological Behaviors or Actions
Bergin and Corbin 1992	Environmental Responsibility	1,521 Canadian Adults	General Ecological Behaviors or Actions
Roberts 1996	Ecologically Conscious Consumer Behavior (ECCB)	1,503 Adult U.S. Consumers	General Ecological Behaviors or Actions

Appendix B

SURVEY

1) ***Are you a contractor by profession?***

   A) Yes

   B) No

Ecologically conscious consumers are defined as individuals who purchase products, which they perceive to have a positive (or less negative) impact on the environment.

Ecologically conscious consumer behavior (ECCB) is thus defined as the act of purchasing products, which are perceived to have a positive (or less negative) impact on the environment.

2) ***Would you categorize your purchase today as ecologically conscious consumer behavior?***

   A) Yes

   B) No

3) ***On a categorized scale of (1) to (5), with (1) being the lowest and (5) being the highest; rate your ability as an individual consumer to affect environmental/resource problems?***

   (1) (2) (3) (4) (5)

4) ***On a categorized scale of (1) to (5), with (1) being the lowest and (5) being the highest; rate your concern for the environment.***

   (1) (2) (3) (4) (5)

5) ***Which of the following best describes your social ideology?***

   A) Liberal
   B) Conservative

6) Age

A) 18-24
B) 25-44
C) 45-59
D) 60-74
E) 75 +

7) Sex

A) Male
B) Female

8) Household Income

A) Less than $15,000
B) $15,000-$34,999
C) $35,000-$74,999
D) $75,000-$149,999
E) $150,000 +

9) Please circle the highest educational level you have completed.

A) Less than High School
B) High School Degree (Includes Equivalency)
C) Some College/Associates Degree/Trade School
D) Bachelors Degree
E) Graduate or Professional Degree

10) County/City and State of residence.

County:_____
City: _____
State: _____

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(click on student link).

Appendix C

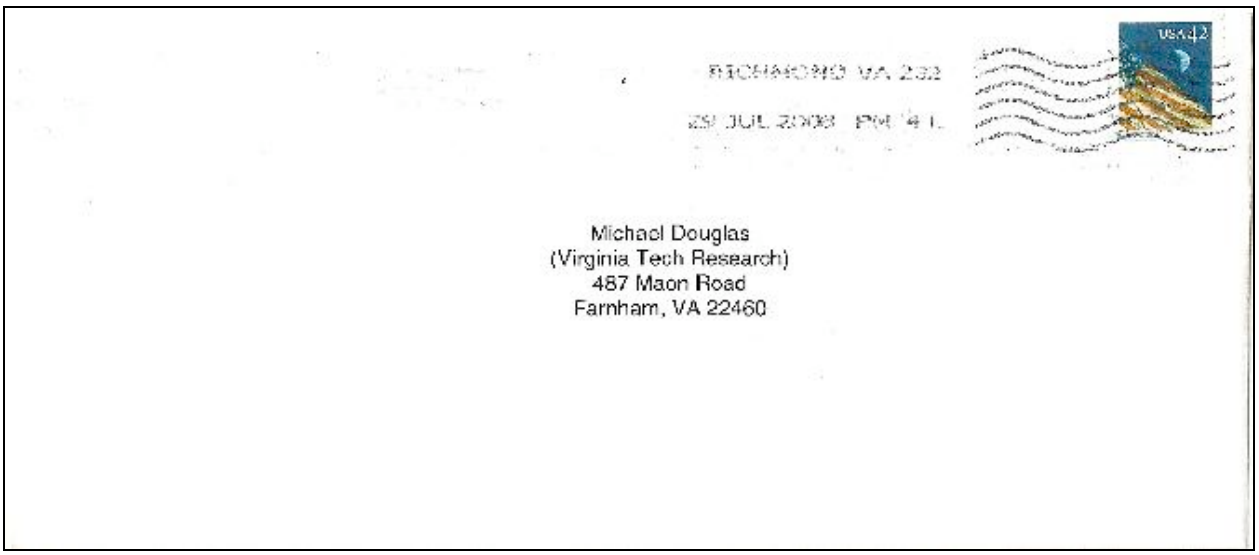
Store Name	Store Location (City)	City Population	Store Front	Internet Sales
Eco Supply	Richmond, VA	193,000 (Estimate)	✓	✓
Nature Neutral	Charlottesville, VA	40,000 (Estimate)	✓	✓
Habitat for Humanity	Roanoke, VA	92,000 (Estimate)	✓	

Note: Not implied as all exclusive (information taken from each store's website)

	Building Materials							
Store Name	**Lumber (Dimensional)**	**Paint**	**Sealers, Glues, Adhesive, Caulks**	**Flooring**	**Interior Components**	**Insulation**	**Plumbing**	**Electrical**
Eco Supply	✓	✓	✓	✓	✓			
Nature Neutral	✓	✓	✓	✓	✓	✓	✓	
Habitat for Humanity	✓	✓	✓	✓	✓	✓	✓	✓

	Miscellaneous		
Store Name	**Furniture**	**Cleaning Supplies**	**Lawn and Garden**
Eco Supply	✓		
Nature Neutral		✓	✓
Habitat for Humanity	✓	✓	✓

Appendix D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