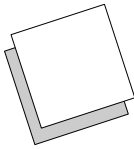


An executive summary for managers and executive readers can be found at the end of this article



Environmental segmentation alternatives: a look at green consumer behavior in the new millennium

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Abstract *Looking to the future of green marketing, examines the dynamic nature of ecologically conscious consumer behavior. The study also provides a method of profiling and segmenting college students based upon ecologically conscious consumer behavior. Findings indicate that, despite a significant amount of past research attention, demographic criteria are not as useful a profiling method as psychographic criteria. Consistent with past findings, the study indicates that perceived consumer effectiveness (PCE) provides the greatest insight into ecologically conscious consumer behavior. Further, the inclusion of altruism to the profile appears to add significantly to past efforts. Additional constructs examined suggest that environmental segmentation alternatives are more stable than past profiles that have relied primarily on demographic criteria.*

Introduction

Concern over the environment has evolved through several distinct phases. From the 1960s ecology movement focusing on pollution and energy conservation, to the recent use of environmental issues as a source of competitive advantage in business and politics, individual and societal concerns over environmental issues have become increasingly apparent to the casual observer as the twenty-first century draws near. This evolution has resulted in an expanded list of issues that fall within the domain of environmental responsibility. With increased social and political pressure, companies have moved beyond simply addressing pollution and waste disposal to looking for alternative package composition and design, alternative product formulations, and cause-related promotion in an effort to keep in-step with the environmental movement.

Not surprisingly, the evolution of academic investigation of green issues has mirrored the evolution of environmental sensitivity in the general populace. Initial efforts of 25-30 years ago introduced the topic as appropriate for further exploration. A second wave of academic inquiry redefined the area in light of the increased environmental concern expressed in the 1980s. As with the practitioner publications, the academic literature indicated that the 1990s would see an increase in environmental concern. It was widely believed that businesses would have to become more environmentally and socially sensitive to remain competitive (e.g. Roberts, 1995; 1996a; 1996b).

Concern over the environment

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As the new millennium draws near, key questions remain unanswered. What is the nature of the ecologically conscious consumer of the future? Do these consumers differ from the ecologically conscious consumer of the past, and if so, how do they differ? A review of past literature in the area of ecologically conscious consumer behavior and an assessment of segmentation alternatives will be followed by the results of an empirical investigation of ecologically conscious consumer behavior (ECCB) among college students. A discussion of these results will attempt to shed light on the state of green marketing as we prepare for the new millennium.

Ecologically conscious consumers

Ecologically conscious consumers

Numerous studies have addressed the characteristics of ecologically conscious consumers either as a primary point of investigation or as a secondary issue. The majority of these studies have looked at, and found, demographic variables associated with self-report measures of environmental commitment, behavioral indicators of environmental commitment, or psychometric scales measuring environmental consciousness (e.g. Samdahl and Robertson, 1989; Zimmer *et al.*, 1994). Some have offered additional attitudinal or psychographic dimensions associated with green attitudes and behavior (e.g. Roberts, 1996b; Roberts and Bacon, 1997; Stern *et al.*, 1993). A review of these studies suggests several general indicators of an individual's propensity to engage in ecologically conscious consumer behavior.

Demographic characteristics

A number of past studies have made attempts to identify demographic variables that correlate with ecologically conscious attitudes and/or consumption. Such variables, if significant, offer easy and efficient ways for marketers to segment the market and capitalize on green attitudes and behavior.

Early studies of ecology

Age. Going back to the early studies of ecology and green marketing, age has been explored by a number of researchers (e.g. Aaker and Bagozzi, 1982; Anderson and Cunningham, 1972; Anderson *et al.*, 1974; Hume *et al.*, 1989; Kinnear *et al.*, 1974; Leonard-Barton, 1981; McEvoy, 1972; Murphy *et al.*, 1978; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Tognacci *et al.*, 1972; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). The general belief is that younger individuals are likely to be more sensitive to environmental issues. There are a number of theories offered in support of this belief, but the most common argument is that those who have grown up in a time period in which environmental concerns have been a salient issue at some level, are more likely to be sensitive to these issues.

As with many of the demographic variables, however, the findings have been somewhat equivocal. Some of the researchers to explore age as a correlate to green attitudes and behavior have found non-significant relationships (e.g. Kinnear *et al.*, 1974; McEvoy, 1972; Roper, 1990; 1992). Others have found the relationship to be significant and negatively correlated with environmental sensitivity and/or behavior as predicted (e.g. Anderson *et al.*, 1974; Tognacci *et al.*, 1972; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). Still others have found the relationship to be significant, but *positively* correlated (e.g. Roberts, 1996b; Samdahl and Robertson, 1989).

Explanations for this positive correlation include attitudes formed as a result of "depression-era" conservation (Roberts, 1996b; Samdahl and Robertson, 1989) and/or behaviors stemming from a general increase in social and

charitable activities among the middle aged (Dychtwald and Gable, 1990; Roberts, 1996b).

Sex. A second demographic variable to be examined is sex (e.g. Arbuthnot, 1977; Brooker, 1976; Hounshell and Liggett, 1973; MacDonald and Hara, 1994; McEvoy, 1972; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Stern *et al.*, 1993; Tognacci *et al.*, 1972; Van Liere and Dunlap, 1981). The development of unique sex roles, skills, and attitudes has led most researchers to argue that women are more likely than men to hold attitudes consistent with the green movement. Theoretical justification for this comes from Eagly (1987), who holds that women will, as a result of social development and sex role differences, more carefully consider the impact of their actions on others.

Green research

As is the case with age-based green research, the results of gender-based investigations are still far from conclusive. Several studies have found the relationship not to be significant (e.g. Arbuthnot, 1977; Brooker, 1976; Samdahl and Robertson, 1989; Tognacci *et al.*, 1972). Others have found support for the theoretical justification given (e.g. Hounshell and Liggett, 1973; Roberts, 1996b; Roper, 1990; 1992; Stern *et al.*, 1993; Van Liere and Dunlap, 1981). Still others have found the opposite of the predicted relationship (e.g. MacDonald and Hara, 1994; McEvoy, 1972).

Income. Income is generally thought to be positively related to environmental sensitivity. The most common justification for this belief is that individuals can, at higher income levels, bear the marginal increase in costs associated with supporting green causes and favoring green product offerings. Numerous studies have addressed the role of income as a predictor of ECCB or a related construct (e.g. Anderson and Cunningham, 1972; Anderson *et al.*, 1974; Antil, 1978; Kasarjian, 1971; Kinnear *et al.*, 1974; McEvoy, 1972; Newell and Green, 1997; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994).

Interesting hypotheses

One of the more interesting hypotheses involving income stems from a study conducted by Newell and Green (1997). They contend that income and education moderate the effect that race plays on shaping environmental concern. Specifically, they found that differences between the perceptions of black and white consumers with respect to environmental issues decrease as both income and education go up. Other studies have shown a non-significant direct effect of income on environmental awareness (e.g. Anderson *et al.*, 1974; Antil, 1978; Kassarian, 1971; Van Liere and Dunlap, 1981). Several studies have shown the previously mentioned positive relationship between income and environmental attitudes and behaviors (e.g. Kinnear *et al.*, 1974; McEvoy, 1972; Roper, 1990; 1992; Zimmer *et al.*, 1994). Finally, a few studies have found the opposite, a negative relationship between income and environmental concerns (e.g. Roberts, 1996b; Samdahl and Robertson, 1989). In his study, Roberts (1996b) theorizes that the differences shown in early studies may have been washed out by the overall growth in environmental concerns across all income levels. He also cautions that although the relationship in his study was significant, the amount of variance explained was small.

Education. Level of education is another demographic variable that has been linked to environmental attitudes and behavior (e.g. Aaker and Bagozzi, 1982; Anderson *et al.*, 1974; Kinnear *et al.*, 1974; Leonard-Barton, 1981; McEvoy, 1972; Murphy *et al.*, 1978; Newell and Green, 1997; Roberts, 1995;

Education and environmental issues

1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Schwartz and Miller, 1991; Tognacci *et al.*, 1972; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). The hypothesized relationship has been fairly consistent across these studies. Specifically, education is expected to be positively correlated with environmental concerns and behavior.

Although the results of studies examining education and environmental issues are somewhat more consistent than the other demographic variables discussed to this point, a definitive relationship between the two variables has not been established. The vast majority of these studies have found the predicted positive relationship (Aaker and Bagozzi, 1982; Anderson *et al.*, 1974; Leonard-Barton, 1981; McEvoy, 1972; Murphy *et al.*, 1978; Roberts, 1996b; Roper, 1990; 1992; Schwartz and Miller, 1991; Tognacci *et al.*, 1972; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). Samdahl and Robertson (1989) found the opposite, that education was negatively correlated with environmental attitudes, and Kinnear *et al.* (1974) found no significant relationship.

Place of residence. Place of residence has been another variable of interest since the early days of green research, though the majority of interest in this variable has been in the last 15 years. In nearly 30 years of research, many studies have considered the correlation between place of residence and environmental concern. Of the studies (e.g. Antil, 1984; Hounshell and Liggett, 1973; McEvoy, 1972; Samdahl and Robertson, 1989; Schwartz and Miller, 1991; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994) to address place of residence as a correlate of green attitudes and behaviors, all but Hounshell and Liggett (1973) have found that those living in urban areas are likely to show more favorable attitudes towards environmental issues. Hounshell and Liggett found no significant relationship between the two variables.

Psychographic correlates

Psychographic characteristics

Several studies have attempted to identify psychographic correlates of green attitudes and behaviors. Though these studies have not investigated psychographic variables in as exhaustive a manner as the research into demographics, they do provide some interesting insights into the nature of the green consumer.

Political orientation. Hine and Gifford (1991) investigated the effect of a fear appeal relating to the anti-pollution movement on several different pro-environmental behaviors. Among the significant findings, the researchers found that political orientation was significantly correlated with one of the lower-order responses, verbal commitment. Specifically, their findings suggest that those with more liberal political beliefs are more likely to exhibit strong verbal commitment than those with more conservative political views. This is in keeping with the general perception of pro-environmental issues as being a part of the "liberal" mainstream. Roberts (1996b) further confirmed this liberalism effect. His study, however, established liberalism as relevant across a general range of ecologically conscious concerns and behaviors rather than focusing on any single concern.

Altruism. Based on Schwartz's norm-activation theory, Stern *et al.* (1993) examined the role that social-altruism and egoism played in influencing green behavior. Specifically, their discussion centers on whether social-altruism, a concern for the welfare of others, is the sole driver of

Attitudes and responses

environmentally friendly market behavior, or whether the positive effect of social-altruism is countered by the negative influence of egoism, which inhibits willingness to incur extra costs associated with environmentalism. Their research also explores biospheric-altruism, a concern for the non-human elements of the environment. Their findings suggest that all three of these constructs – social-altruism, biospheric-altruism, and egoism – influence willingness to take political action. However, social-altruism is not significant in predicting willingness to pay either higher income taxes or higher gasoline taxes. Further, biospheric-altruism is not significant in predicting willingness to pay higher gasoline taxes.

Perceived consumer effectiveness. Several studies (e.g. Antil, 1978; Berger and Corbin, 1992; Kinnear *et al.*, 1974; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Webster, 1975; Weiner and Doescher, 1991) have addressed the premise that consumers' attitudes and responses to environmental appeals are a function of their belief that individuals can positively influence the outcome to such problems. This attitude or belief is referred to as perceived consumer effectiveness (PCE). Findings have been fairly conclusive that PCE is positively correlated with ECCB. Recently, Roberts (1996b) found that this was the single strongest predictor of ECCB, surpassing all other demographic and psychographic correlates examined.

Environmental concern. The relationship between attitudes and behavior is one that has been explored in a variety of contexts. In the environmental literature, the question has been addressed by exploring the relationship between the attitudinal construct, environmental concern, and various behavioral measures and/or observations. Those studies (e.g. Antil, 1984; Kinnear *et al.*, 1974; Lepisto, 1974; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Van Liere and Dunlap, 1981) examining environmental concern as a correlate of environmentally friendly behavior have generally found a positive correlation between the two.

Green products and services

Assessing current segmentation alternatives

In assessing the usefulness of the aforementioned variables for segmenting the markets for green products and services, one must consider the criteria often used to judge segmentation alternatives in general:

- (1) segment size,
- (2) segment accessibility,
- (3) ease of identification,
- (4) strategic/operational effectiveness, and
- (5) segment stability.

It has long been held that the "ideal" approach to segmenting the market for any product is the approach that optimizes these five constructs. The current state of ecological consumer profiling will be examined in light of these criteria.

Segment size. At this point in its development, few doubt that the overall market for green goods and services is large enough for, if properly managed, a firm to operate profitably (Roberts, 1995). As such, the size of green market segments is no longer in question, irrespective of the segmentation approach used.

Segment accessibility. The accessibility of these segments, in terms of both logistics and communication, is not in doubt. Firms have clearly shown the

ability to both communicate with ecologically conscious consumers and to reach them effectively with appropriate goods and services. As such, the usefulness of the various approaches to isolating ecologically conscious consumers from the mass market boils down to questions relating to ease of identification, usefulness in strategic and operational planning, and segment stability.

Ease of identification. As is often the case in marketing, the simplest segments to identify are based on demographic profiling. Perhaps that explains the relatively high volume of research done on demographic segmentation of green consumers. As mentioned, the typical profile given for green consumers – young, mid- to high-income, educated, urban women – is totally dependent upon demographic profiling. There is little doubt that demographic variables present the easiest way to discriminate between those consumers who share a concern for the environment, and those who do not. The real question that must be asked is this. How *effective* is demographic profiling for green marketers?

Demographic profiling

Strategic/operational effectiveness. Whatever advantages demographic profiling of green consumers offers over psychographic profiling in terms of ease of use are more than offset by the relative strength of the associations between psychographic variables and ecologically conscious consumption. In other words, psychographic variables provide a stronger and therefore more useful profile of green consumption. For example, Roberts (1996b) reported an R^2 of 0.06 for a model using age, sex, income, education, and occupation (all of which were individually statistically significant) to explain ECCB. In contrast, when psychographic correlates were introduced, R^2 increased to 45 percent. Further strengthening this argument, altruism – a demonstrated psychographic correlate of green consumption – was not included in the Roberts (1996b) study. It is quite likely that the inclusion of altruism would have further strengthened the usefulness of his segmentation model.

Segment stability. Finally, when one considers the stability of resulting segments, there are serious questions raised regarding demographic profiling of green consumption. As discussed previously, the results of the demographic research range from equivocal to contradictory. Several explanations exist for these disparate findings. First, the various studies operationalize green consumption in a wide variety of ways. For example, the “dependent” variables used across these studies range from general attitude measures to incident analyses of specific types of environmentally friendly behavior (e.g. household recycling). As such, study-to-study comparisons may be expected to result in seemingly contradictory findings. An alternative explanation for these contradictory findings, however, relates to the maturation of the green marketing phenomena. Quite simply, all of the studies might provide accurate snapshots of green consumption *at that point in time*. Because the movement was in the early stages of its life cycle, however, these relationships might change as time passes. Thus, what has been described throughout the green marketing literature is an unstable or “...schizophrenic profile of the demographic characteristics of the green consumer” (Roberts, 1996b, p. 219). Unfortunately, while the psychographic research has been somewhat more consistent, there has not been *enough* research on these various correlates of green consumption to draw valid conclusions about the stability of psychographic profiling. What is needed is

additional research into the psychographic correlates of ecologically conscious consumer behavior.

Replication and extension

Study objectives

The objectives of the present study will be accomplished through a replication and extension of research conducted by Roberts (1996b). An attempt to replicate this work offers several opportunities. First, though the Roberts (1996b) study is the most comprehensive effort to examine a range of demographic and psychographic correlates of ECCB to date, it did not include altruism, an important correlate of green consumption that is a significant correlate of ecologically conscious consumer behavior (Stern *et al.*, 1993). Thus, the present study will seek to determine the role that altruism plays in profiling the ecologically conscious consumer in combination with those constructs considered earlier by Roberts (1996b). Second, a clean replication of the findings of Roberts (1996b) would allow an assessment of the stability of green consumers as the twenty-first century draws near. To further address the *future* of ecologically conscious consumption, the present study will concentrate on younger consumers who represent the future of green consumption.

Questionnaire

Methodology

Sample

The questionnaire was administered to a convenience sample of 235 students at a major university. The respondents, who included both traditional and non-traditional students, were asked to complete the survey in their regularly scheduled classes. The subjects were given as much time as needed to complete the questionnaire. A pre-screening of the subjects was undertaken to ensure that no respondent completed the survey more than once. Sixty-six percent of the respondents were male, and the average age of the respondents was 22 years. The median family income range was \$60,000-\$79,999. Table I provides a complete summary of the demographic characteristics of the respondents.

Sex (<i>n</i> = 235, w/3 missing)		Academic classification (<i>n</i> = 235, w/8 missing)	
Male	65.9	Freshman	0.5
Female	<u>34.1</u>	Sophomore	5.7
Total	100.0	Junior	22.9
		Senior	<u>70.9</u>
			100.0
Age (<i>n</i> = 235, w/3 missing)		Family income range (<i>n</i> = 235, w/13 missing)	
18	1.7	< \$5,000	3.2
19	5.2	\$5,000-\$9,999	0.9
20	18.1	\$10,000-\$14,999	2.2
21	26.3	\$15,000-\$19,999	5.0
22	24.6	\$20,000-\$24,999	3.6
23	11.2	\$25,000-\$29,999	1.8
24	3.4	\$30,000-\$39,999	5.4
25	1.3	\$40,000-\$49,999	8.5
26	2.2	\$50,000-\$59,999	8.1
>26	<u>6.0</u>	\$60,000-\$79,999	14.9
Total	100.0	>\$80,000	<u>46.4</u>
		Total	100.0

Table I. Sample characteristics (% respondents)

Survey instrument

Dependent measure. The dependent variable, ECCB (Roberts, 1996b), measures the extent to which individual respondents purchase goods and services believed to have a more positive (or less negative) impact on the environment. As noted by Roberts (1996b), the behavioral orientation of the scale helps to mitigate one problem widely noted in marketing research and green marketing research in particular, that attitudes often do not translate into behavior.

The ECCB construct was measured using the same 30-item scale used in the Roberts (1996b) study. The individual items were in a Likert-format, anchored by "Always True" (5) and "Never True" (1). The ECCB scale was calculated as a sum of the responses to the 30-item scale (with appropriate items reverse scored). The Appendix shows the individual items for the ECCB scale.

Demographic measures

Independent measures. The same set of demographic measures reported in the original study was included in the current study, with modifications made to reflect differences in the populations of interest. Four key demographic variables were investigated: age, family income, sex, and academic classification (a proxy for education in the original study). Occupation was dropped because of the nature of the population of interest in the present study and because it was not significant with respect to ECCB in the original study. With respect to the psychographic measures, one additional construct was added to accommodate the findings of Stern *et al.* (1993). In addition to the psychographic measures of the original Roberts study (liberalism, perceived consumer effectiveness, and environmental concern), a measure of altruism was taken. Thus, four of the key psychographic correlates shown to be significant in the past were included in the present study.

Analysis

Method of analysis

The analysis was done in two phases. In the first phase, basic correlations were examined in an effort to compare current results with those of past research in terms of direction and significance of the relationships. The correlation of each of the demographic and psychographic variables with ECCB was examined. The second phase of the analysis involved the use of multiple and step-wise regression to develop a profile of the ecologically conscious consumer. This is consistent with the analysis done by Roberts (1996b). For the multiple regression analysis, ECCB was modeled as the dependent variable with the various demographic and psychographic variables serving as predictor variables. Three pre-specified models were examined. The first included all demographic and psychographic variables, the second included only the four demographic variables, and the third included only the four psychographic variables. These were designed to give some general insight into the usefulness of the two commonly used types of green segmentation criteria – demographics and psychographics. The step-wise procedure was designed to identify the "best" profile and used an alpha-to-enter value of 0.05 and an alpha-to-exit value of 0.10.

Results

The results of the preliminary analysis of correlations indicated that the demographic variables age, sex, and classification were significantly correlated with ECCB when considered individually. In addition, all of the psychographic variables were significantly correlated with ECCB. The correlation coefficients are shown in Table II.

Correlation (# of cases)	ECCB*	Age	Sex	Income	Classification (Year)	PCE**	EC***	Liberalism	Altruism
ECCB*	1.0								
Age	0.157 ^b (219)	1.0							
Sex	0.136 ^b (219)	-0.052	1.0						
Income	-0.101 (210)	-0.177 ^a 222	-0.083 222	1.0					
Classification (Year)	-0.156 ^b (217)	0.317 ^a 230	0.056 230	-0.084 221	1.0				
PCE**	0.568 ^a (219)	0.005 231	0.244 ^a 231	-0.123 221	-0.029 229	1.0			
EC***	0.332 ^a (209)	-0.030 221	0.209 ^a 221	-0.101 211	-0.086 219	0.299 ^a 220	1.0		
Liberalism	0.211 ^a (215)	-0.009 228	0.047 227	-0.258 ^a 218	-0.186 ^a 227	0.102 227	0.309 ^a 217	1.0	
Altruism	0.411 ^a (218)	0.008 231	0.201 ^a 231	-0.086 221	-0.038 229	0.462 ^a 230	0.171 ^b 220	0.219 ^a 227	1.0

Notes: *Ecologically conscious consumer behavior, **Perceived consumer effectiveness, ***Environmental concern, ^a $p < 0.01$, ^b $p < 0.05$

Table II. Correlations of green consumer profile variables

As stated, four separate regression procedures were run. A regression of ECCB on the four demographic variables indicates that age, sex, and classification are significant ($p < 0.05$) and that income lacks significance (see Table III). The demographics-only model has an R^2 of 0.087.

The second regression model includes only the psychographic predictor variables. This analysis indicates that altruism, environmental concern, and perceived consumer effectiveness were significant ($p < 0.05$), while liberalism lacked statistical significance (see Table IV). The psychographics-only model outperformed the demographics-only model as indicated by an R^2 value of 0.393.

The third equation included all of the predictor variables. As might be expected, several of the variables (liberalism, sex, and income) were not statistically significant. Age, altruism, environmental concern, perceived consumer effectiveness, and classification maintained their significance ($p < 0.05$). The total variance explained by the full model ($R^2 = 0.434$) represents a marginal (but significant) increase over the psychographics-only model (see Table V).

In an effort to identify an appropriate model to use for profiling purposes, a step-wise regression procedure was run. As indicated by the correlations, the first predictor to enter the model was PCE, explaining 32.8 percent of the variance in ECCB. This is consistent with the earlier findings of Roberts

Variable	Regression coefficient	Significance
Constant	72.846	< 0.001
Age	1.366	0.004
Classification	-7.306	0.002
Income	-0.505	0.300
Sex	5.998	0.033

Notes: $R^2 = 0.087$, $F = 4.881$, $p = 0.001$, $df = 4, 204$

Table III. Regression of ECCB on demographic variables

Psychographic predictor variables

An appropriate model

Variable	Regression coefficient	Significance
Constant	-23.792	0.010
Altruism	1.088	0.010
EC	0.412	0.021
Liberalism	0.489	0.117
PCE	3.821	< 0.001

Notes: $R^2 = 0.393$, $F = 32.207$, $p < 0.001$, $df = 4, 199$

Table IV. Regression of ECCB on psychographic variables

Variable	Regression coefficient	Significance
Constant	-31.623	0.039
Age	1.238	0.001
Classification	-5.358	0.008
Income	0.137	0.748
Sex	-2.086	0.396
Altruism	1.024	0.015
EC	0.404	0.027
Liberalism	0.494	0.136
PCE	3.880	< 0.001

Notes: $R^2 = 0.434$, $F = 17.837$, $p < 0.001$, $df = 8, 186$

Table V. Regression of ECCB on all demographic and psychographic variables

(1996b). After PCE, the variables entered in the following order (incremental gain in R^2 in parentheses): altruism (0.03), liberalism (0.018), age (0.018), classification (0.022), and environmental concern (0.015). Again, the ordering of the entry suggests that psychographics generally represent a better method of segmenting the market than demographics. Of additional interest is the fact that the inclusion of altruism in the model is a significant addition to the original model proposed by Roberts (1996b). Table VI summarizes the results of the step-wise regression.

Managerial implications

Using demographics as segmentation criteria

Serious concerns

In light of the findings of both the present study and past work on the subject, serious concerns exist as to the managerial importance of demographics as segmentation criteria when addressing ECCB. While several of the demographic variables achieve statistical significance, they lack the explanatory power of the psychographic variables. As such, managers and researchers must ask how useful the typical profile of the green consumer (young, mid- to high-income, educated, urban women) is in terms of marketing applications. These concerns have been raised in the past (Roberts, 1995; 1996b; Roberts and Bacon, 1997) and appear just as valid as we prepare for the twenty-first century. From the results of both past studies and the present work, the use of either a psychographics-only model (incorporating PCE, altruism, and EC) or a mixed model (incorporating a range of demographics and psychographics) should be preferred to traditional demographic profiling methods.

Using psychographics as segmentation criteria

As noted, the ability of psychographic measures to more accurately discriminate between varying degrees of ecologically conscious consumer

Variables	Regression coefficients	Variable significance	Model R^2	Model F	Model significance
Constant	2.510	0.736	0.328	94.394	< 0.001
PCE	4.863	< 0.001			
Constant	-6.067	0.438	0.352	53.714	< 0.001
PCE	4.091	< 0.001			
Altruism	1.278	0.003			
Constant	-15.516	0.076	0.367	38.526	< 0.001
PCE	4.086	< 0.001			
Altruism	1.076	0.013			
Liberalism	0.742	0.019			
Constant	-34.007	0.004	0.382	30.984	< 0.001
PCE	4.063	< 0.001			
Altruism	1.068	0.012			
Liberalism	0.746	0.017			
Age	0.852	0.019			
Constant	-18.877	0.140	0.402	27.032	< 0.001
PCE	4.064	< 0.001			
Altruism	1.023	0.015			
Liberalism	0.626	0.044			
Age	1.184	0.002			
Classification	-5.335	0.008			
Constant	-27.451	0.039	0.413	23.785	< 0.001
PCE	3.781	> 0.001			
Altruism	0.992	0.017			
Liberalism	0.456	0.149			
Age	1.243	0.001			
Classification	-5.550	0.005			
EC	0.392	0.029			

Table VI. Step-wise regression of ECCB on all demographic and psychographic variables

behavior is supported by the present study. The nature of the psychographic/ECCB relationship is discussed in detail in the following section.

Perceived consumer effectiveness and ECCB. The data are supportive of Roberts (1996b) with respect to the relative importance of PCE in explaining ECCB. In both studies, PCE was the most important correlate of ECCB. Specifically, the results of both studies suggest that an individual must be convinced that his or her pro-environmental actions will be effective in fighting environmental deterioration. This has implications for a variety of marketing activities. It suggests that environmental-based marketing efforts should be explicitly linked with beneficial outcomes. Simply claiming to be “green” is no longer enough. Instead, marketers must show how consumers choosing green products are helping in the struggle to preserve the environment.

Importance of altruism

Altruism and ECCB. The relative importance of altruism in predicting ECCB suggests that firms must not only be explicit in the link between their environmental strategies and beneficial outcomes, but must also show how other people are better off as a result. This finding is consistent with those of Stern *et al.* (1993). It is, however, an addition to the earlier findings of Roberts (1996b). No link was made between altruism and ECCB in that study. In the present study, the altruism measure was the second most important of all of the predictor variables, suggesting that it should not be ignored when profiling green consumers.

Predictor

Liberalism and ECCB. The third most important predictor in the step-wise regression was liberalism. The direction of the relationship supports earlier studies that found a left-of-center political agenda consistent with pro-environmental attitudes and behavior. While this variable has fewer implications for marketers than either PCE or altruism, it is still useful as a profiling variable. There is one additional implication relating to choice of spokespeople. The impact of liberalism on ECCB would suggest that the use of spokespeople perceived to share similar views would improve perceived argument strength.

It should also be noted that in both the full model (including both demographics and psychographics) and the psychographics-only model, liberalism failed to achieve significance. Thus, while it may correlate at a significant level, it should not necessarily be considered as managerially “important”.

Environmental concern and ECCB. The findings regarding EC are somewhat mixed. It does enter the step-wise model on the sixth iteration, making it less important than PCE, altruism, liberalism, age, or classification. However, unlike liberalism, EC is significant in both the full model and the psychographics-only model. The relationship found between environmental concern and ECCB has important implications for both marketers and public policy makers alike. The findings suggest that, even if someone is concerned about the environment, (s)he is unlikely to be proactive in a behavioral sense unless (s)he feels individuals can be effective in combating environmental difficulties. The results suggest that attitude formation is a precursor to behavioral response. This is certainly in keeping with the foundations of behavioral research (e.g. Fishbein and Ajzen, 1972; 1975).

Replication of the Roberts results

Psychographic stability. Of interest in the present study is the near perfect replication of the Roberts (1996b) results. This replication of Roberts’ findings suggests that the maturation of green marketing may have resulted in a more *stable* profile of the ecologically conscious consumer. Not only did the results suggest a near identical profile (with the noted addition of altruism), but it was replicated in a younger sample, suggesting that the usefulness of this profile should extend well into the next century.

Future research

The addition of the current findings to the extant environmental literature suggests that additional work on profiling (and segmentation) should focus on psychographics, rather than more traditional (i.e. demographic) methods. As the environmental movement continues to mature, it is important that segmentation criteria be periodically investigated to validate their use in light of changes taking place.

Also, additional attention should be devoted to identifying other psychographic variables useful in environmental profiling. Too much attention has been given to demographic profiling, with somewhat tenuous results. Given the demonstrated usefulness of psychographic variables in terms of profiling ECCB, it seems reasonable to spend at least as much effort on the more promising psychographic segmentation criteria. Additionally, environmental awareness and knowledge have shown some promise as correlates of various environmental attitudes and consumer behavior.

With respect to those variables explored in this study, additional scale development work might find a more parsimonious set of items for measuring the various constructs. For example, the 30-item ECCB scale has

some very appealing psychometric properties. It is, however, somewhat cumbersome to administer due to its length. If a shorter version of the scale could be developed, it would likely lead to more widespread use by both practitioners and academic researchers alike. This would facilitate the comparison of results across future studies.

Finally, these findings could be applied to areas such as socially conscious consumer behavior. What factors drive consumers to buy products from companies that donate money to charities, hire minorities, or avoid products from companies which use animals in product testing or are involved in socially unpopular activities or industries? For those marketers committed to the social marketing philosophy, profiling tools such as those developed here might prove useful. Given that both environmental and social consciousness are other-directed, it is likely that these or other psychographic variables will prove a more useful approach to segmenting the market than demographics.

Three limitations

Limitations

There are three limitations that must be taken into account when considering the findings presented here. First, the study is cross-sectional in nature. While causality may in fact exist, the cross-sectional nature of the study makes it difficult to infer this from a single study. Such efforts are, however, commonly reported both in the environmental literature and the marketing literature. A second problem relates to the sample used. The objective of the study was to examine profiling opportunities among those consumers who represent the future of the green marketing movement. The sample, however, was a convenience sample consisting of college students only. Further, the respondents were all from the same university. As such, the results may not be representative of college students in general. Last, the measures used, while validated measures, were self-report measures. Supporting these self-report measures with observational or behavioral measures would strengthen the findings.

Conclusion

The present study's findings are largely consistent with the earlier findings of Roberts (1996b). Psychographics appear to be more effective than demographics in explaining variation in college students' ECCB. A person's belief that individuals can play an important role in combating environmental destruction (PCE) is likely the driving force behind ECCB. This relationship held across samples of adult consumers (Roberts, 1996b) and with college students in the present study, suggesting a stable green consumer profile. Although liberalism was found to be a significant correlate of ECCB, it appears that this type of behavior transcends ideological boundaries. Altruism was also found to play a role, albeit a secondary one, in explaining ECCB.

Environmental concern

Most striking to the present authors is the finding that, although significant, environmental concern does not play an integral role in ECCB. It is more important that consumers believe in the efficacy of individuals to combat environmental destruction than it is to show concern for the environment. The following statement may best summarize this relationship, "Why get involved in a losing battle?" This particular finding provides clear direction for advertisers and public policy makers when developing campaigns to encourage pro-environmental behavior.

Additional areas for future research are also offered. Among these are studies seeking to develop more manageable scales for addressing the constructs of

interest, to refine segmentation criteria, to identify additional segmentation criteria, and to extend the findings to other similar domains (e.g. socially conscious consumer behavior).

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Appendix

Ecologically conscious consumer behavior (ECCB) items

1. To save energy, I drive my car as little as possible.
2. I normally make a conscious effort to limit my use of products that are made of or use scarce resources.
3. I try to buy energy efficient household appliances.
4. I always try to use electric appliances (e.g. dishwasher, washer and dryer) before 10 a.m. and after 10 p.m.
5. I will not buy products which have excessive packaging.
6. When there is a choice, I always choose that product which contributes to the least amount of pollution.
7. I have tried very hard to reduce the amount of electricity I use.
8. If I understand the potential damage to the environment that some products can cause, I do not purchase these products.
9. I have switched products for ecological reasons.
10. I use a recycling center or in some way recycle some of my household trash.
11. I make every effort to buy paper products made from recycled paper.
12. I have purchased a household appliance because it uses less electricity than other brands.
13. I use a low-phosphate detergent (or soap) for my laundry.
14. I have convinced members of my family or friends not to buy some products which are harmful to the environment.
15. I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity I use.
16. I have purchased products because they cause less pollution.
17. I do not buy products in aerosol containers.

(continued)

18. Whenever possible, I buy products packaged in reusable containers.
19. When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.
20. When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.
21. I buy toilet paper made from recycled paper.
22. I buy Kleenex made from recycled paper.
23. I buy paper towels made from recycled paper.
24. I will not buy a product if the company that sells it is ecologically irresponsible.
25. I have purchased light bulbs that were more expensive but saved energy.
26. I try only to buy products that can be recycled.
27. To reduce our reliance on foreign oil, I drive my car as little as possible.
28. I usually purchase the lowest priced product, regardless of its impact on society.
29. I do not buy household products that harm the environment.
30. I buy high efficiency light bulbs to save energy.

Perceived consumer effectiveness (PCE) items

1. It is worthless for the individual consumer to do anything about pollution.
2. When I buy products, I try to consider how my use of them will affect the environment and other consumers.
3. Since one person cannot have any effect upon pollution and natural resource problems, it doesn't make any difference what I do.
4. Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.

Environmental concern (EC) items

1. Plants and animals exist primarily to be used by humans.
2. We are approaching the limit of the number of people the earth can support.
3. To maintain a healthy economy, we will have to develop a steady-state economy where industrial growth is controlled.
4. The earth is like a spaceship with only limited room and resources.
5. Humans need not adapt to the natural environment because they can remake it to suit their needs.
6. There are limits to growth beyond which our industrialized society cannot expand.
7. The balance of nature is very delicate and easily upset.
8. When humans interfere with nature, it often produces disastrous consequences.
9. Humans must live in harmony with nature in order to survive.
10. Mankind is severely abusing the environment.
11. Humans have the right to modify the natural environment to suit their needs.
12. Mankind was created to rule over the rest of nature.

Liberalism items

1. The profits of the big industries should be controlled by the federal government.
2. I am for a federal health insurance program covering men and women of all ages.
3. If unemployment is high, the government should spend to create jobs.
4. A government administered health insurance program is necessary to insure that everyone receives adequate medical care.
5. I am for less government regulation of business.
6. I am for revising the tax structure so that the burden falls more heavily on corporations and persons with large incomes.

Demographic measures

Your age: _____ years

Sex: Male _____ Female _____

What is your classification in school?

_____ Freshman _____ Sophomore _____ Junior _____ Senior

Check the category which best fits your total family income in the last year.

_____	Under \$5,000	_____	\$5,000 - \$9,999	_____	\$10,000 - \$14,999
_____	\$15,000 - \$19,999	_____	\$20,000 - \$24,999	_____	\$25,000 - \$29,999
_____	\$30,000 - \$39,999	_____	\$40,000 - \$49,999	_____	\$50,000 - \$59,999
_____	\$60,000 - \$79,999	_____	\$80,000 or more		



This summary has been provided to allow managers and executives a rapid appreciation of the content of this article. Those with a particular interest in the topic covered may then read the article in toto to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefit of the material present

Executive summary and implications for managers and executives

Save the planet and stay in business

Before we look at Straughan and Roberts' findings about green consumers let's get one thing straight. For all but a handful of firms, "green marketing" isn't about saving the planet, it's about saving the business. We adopt "green" practices and develop "green" products because consumers seem to want them. And governments (who are chasing votes from those same consumers) are not far behind threatening us with new laws and added regulations. Free enterprise must adapt in order to survive.

So who are these "green consumers"?

If, for the time being, we assume that environmental campaigners are strange beings from another planet, then "green consumers" are ordinary folk who believe that businesses have a vital role to play in the "... struggle to preserve the environment". Most importantly, Straughan and Roberts report that it is not stated concerns about the environment that matter but the degree to which the individual consumer believes that his or her actions are likely to make a difference.

Straughan and Roberts focus on trying to identify the factors that predict whether a person will undertake "environmentally conscious consumer behaviour". And, as is often the case with segmentation models, we find that demographics are a pretty blunt tool. The traditional view of the "green consumer" – founded on demographic analysis – simply doesn't stand up to detailed examination. Instead we need to look at attitudinal and behavioural factors – at psychographics.

Straughan and Roberts identify some important psychographic predictors of "green" consumer behaviour:

- *Perceived consumer effectiveness – whether what we do as individuals makes a difference;*
- *Altruism – a concern for the welfare of others;*
- *Liberalism – left-wing political beliefs.*

However, in looking more deeply at the results, Straughan and Roberts conclude that, while liberalism and altruism play a role in determining "green" consumer behaviour, it is a person's "... belief that individuals can play an important role in combating environmental destruction ..." that really drives such behaviour. The "green" message has become so ubiquitous that it is no longer the exclusive view of left-wingers and environmentalists. Liberals may be more likely to hold such views but, as Straughan and Roberts observe, "... it appears that this type of behaviour transcends ideological boundaries".

Can environmentalism join with consumerism?

One of the ironies about the term "green consumer" is that our consumer society is one of the pet hates of environmentalists. It is our desire for the gratification of consumption that drives environmental destruction. Being an environmentally responsible consumer means either buying things that don't damage the environment (or do less damage than other alternatives) or else reducing one's personal impact on the environment.

Straughan and Roberts report that expressions of environmental concern do not make for a "green consumer". Although individual "green consumers" will undoubtedly express concerns about "green" issues this is not the motivating force for environmentally conscious consumer behaviour. Even when people accept the belief that we are destroying our environment they do not necessarily take the view that there is anything they can do about the problem.

Communicating the "green" message

Perhaps one solution to this problem lies in communicating to people that the world's environmental problems result, at least partly, from the desires of ordinary consumers. However, for the environmental campaigners this presents a problem since it implies that they have to criticise the very folk whose donations enable them to carry on the fight. It's one thing to attack governments, commercial agriculture or big oil companies but quite another to tell ordinary people that they are the problem.

One possible risk from this type of communications strategy is that people will begin to listen to the critics of environmentalism and ask whether it's really quite as bad as the "green" campaigners like to make out. What happens if people start to tell the environmentalists that it isn't excess packaging that's the problem in landfills but stuff that rots to form toxic leachate? What happens when people say that more energy is used and more waste generated in making recycled paper than is used to make paper from virgin wood pulp?

At the moment we marketers have a pretty easy job. We have to persuade people who buy our products or use our services that doing so is environmentally responsible. And this means reducing our packaging, using recycled materials and making plastics biodegradable. Such actions reflect current beliefs among "green consumers" although we do need to continue to keep abreast of developments in environmental thinking.

It is imperative that businesses adopt environmentally responsible practices. Not, as I said at the start, in order to save the planet, but in order to maintain the consumer society on which our comfortable lives depend. So long as environmentalism remains in the ascendancy, the numbers of "green consumers" will grow and our continued business success will depend on serving those consumers. In a free market we are servants of the consumer and, therefore, what those consumers want determines the products we produce and, increasingly, the way in which we manage the processes of our business.

(A précis of the article "Environmental segmentation alternatives: a look at green consumer behavior in the new millennium". Supplied by Marketing Consultants for MCB University Press.)