



# Consumer religious commitment's influence on ecocentric attitudes and behavior<sup>☆</sup>



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## ABSTRACT

A host of environmental issues are now of concern to many consumers, though efforts by marketing practitioners, researchers, and public policy officials to affect behavioral change among consumers have been marginal. Further, research investigating the influence of consumers' general religiosity as an antecedent to ecocentric attitudes and behaviors yields mixed results. In this study, the authors examine the antecedent role of a specific form of religiosity, intrapersonal religious commitment, on a specific environmental worldview, ecocentric attitude, and six wide-ranging environmental consumer behaviors from a socio-psychological viewpoint. Findings negate the long standing notion of a strictly negative relationship between the Judeo-Christian faith and disregard for the environment. Among Judeo-Christians, when age, gender, and urban/rural profile are controlled, intrapersonal religious commitment has no impact on ecocentric attitudes and behaviors. Thus, highly religious consumers appear to be no less receptive to pro-environmental messages or less likely to engage in environmentally friendly behaviors than other consumers. Consistent with prior research, ecocentric attitudes evidence a relatively weak link with various pro-environmental behaviors. This research has implications for marketing researchers and practitioners. Directions for future research are also provided.

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## 1. Introduction

As environmental issues now receive widespread attention and concern in the public arena, marketing researchers and practitioners now devote an increasing amount of effort toward green marketing and finding the antecedents to ecologically minded consumption behaviors (e.g., Laroche, Bergeron, & Barbaro-Forleo, 2001; McCarty & Shrum, 2001; Milfont, Duckitt, & Cameron, 2006). Despite the known impact that religion has on certain consumption related attitudes and behaviors (Bailey & Sood, 1993; Essoo & Dibb, 2004; Hirschman, 1982; Sood & Nasu, 1995; Swimberghe, Sharma, & Flurry, 2009), research investigating the influence of consumers' religion as an antecedent to environmental attitudes and behaviors yields mixed results. While a thorough review of all of the religiosity measures used in prior research is beyond the scope of this manuscript, the use of general, single-item, categorical, or multi-item measures lacking psychometrically sound properties may affect, in part, the widely varying findings in this field.

This study attempts to overcome these issues and is unique in two ways. First, rather than treating religion as a categorical variable indicated by religious affiliation, this study utilizes a multi-item measure

of intrapersonal religious commitment (IaRC), the degree to which consumers' religious beliefs influence their daily approach to life. Since significant variance exists in individual religious followers' manifestation of their faith, this approach may provide a more realistic examination of religiosity's impact on environmentally oriented attitudes and behaviors. Second, this research investigates the impact of IaRC on ecocentric attitudes (EcA) and environmental behaviors both with and without the inclusion of several relevant control variables. By illustrating the differences that this manipulation can have on the results, this study provides evidence as to why prior research in this area has produced such inconsistent findings.

The rest of the manuscript is laid out as follows. First, literature relevant to the interrelationships between IaRC, EcA, and pro-environmental behaviors is used to formulate several hypotheses. Next, the authors discuss the methods used to test the hypotheses and provide the results. Lastly, the authors provide a discussion of the findings, research implications, and future research directions.

## 2. Literature review and hypotheses

### 2.1. Ecocentric attitudes and environmentally responsible behaviors

The study of environmental attitudes and behavior is a well-documented field of research with a rich history in the social and behavioral sciences (Fernández-Manzanal, Rodríguez-Barreiro, & Carrasquer, 2007; Naito et al., 2010; Robinot & Giannelloni, 2009; Schultz & Zelezny, 1999; Stern & Dietz, 1995). Research typically finds weak or modest relationships between environmental attitudes

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**Table 1**  
Key empirical findings identifying the demographic antecedents of ecocentric attitudes and behaviors.

Demographic antecedent	General impact on ecocentric attitudes and behaviors	Source(s)
Age	Mixed	Casey and Scott (2006); Guth et al. (1995)
Education	Positive	Casey and Scott (2006); Fernández-Manzanal et al. (2007)
Gender	Females have more favorable environmental attitudes and are more likely to engage in environmental behaviors.	Casey and Scott (2006); Dietz, Kalof, and Stern (2002); Fernández-Manzanal et al. (2007); Mainieri, Barnett, Valdero, Unipan, and Oskamp (1997)
Household size	Positive	Gatersleben, Steg, and Vlek (2002)
Rural/urban profile	Urban consumers have more favorable environmental attitudes and are more likely to engage in environmental behaviors.	Guth et al. (1995)
Socio-psychological antecedent	General impact on ecocentric behaviors	Sources
Ecocentric attitudes	Positive	Abdul-Muhmin (2007); Dunlap et al. (2000); Fernández-Manzanal et al. (2007); Milfont et al. (2006); Robinot and Giannelloni (2009); Thapa (1999, 2010)
Value orientations	Altruism, empathy, perceived efficacy, regret toward a facet of the environment, worry about global issues, and self-fulfillment are positively related to ecocentric attitudes and behaviors. Traditionalism and religiosity are negatively related to ecocentric attitudes and behaviors.	Abdul-Muhmin (2007); Berenguer (2007); Deng et al. (2006); Dietz et al. (2002); Fernández-Manzanal et al. (2007); Fraj & Martinez (2006); García-Mira, Real, and Romay (2005); Gupta and Ogden (2009); Milfont et al. (2006); Naito et al. (2010); Oreg & Katz-Gerro (2006); Schwartz & Huismans (1995); Wilson (2003)

and behaviors (e.g. Thapa, 1999). As knowledge and consciousness about important environmental issues increase, environmentally friendly attitudes are generally formed (Abdul-Muhmin, 2007; Kinnear, Taylor, & Ahmed, 1974; Milfont et al., 2006; Thapa, 1999, 2010), which may lead to environmentally responsible behaviors (Casey & Scott, 2006; Fraj & Martinez, 2006).

In an attempt to go beyond the notion of a general attitude toward the environment and discover a stronger link between environmental attitudes and behaviors, some research seeks to understand the sub-structures that comprise individuals' environmental worldviews, assuming that while certain worldviews may be rooted in unchangeable suppositions, other worldviews may be rooted in beliefs that can be molded and matured through awareness and educational mechanisms. Inherent to the environmental worldview is the idea of ecocentrism, referring to consumers' recognition of their role in relation to the nature, social forces in the world around them, reciprocal threats from environmental deterioration, ecological limits, imbalances in nature, and ecological catastrophes (Abdul-Muhmin, 2007; Dunlap, Van Liere, Mertig, & Jones, 2000; Fernández-Manzanal et al., 2007; Milfont et al., 2006; Robinot & Giannelloni, 2009; Thapa, 1999, 2010). O'Riordan (1981) summarizes ecocentrism as follows: "[ecocentrism] preaches the virtues of reverence, humility, responsibility, and care; ecocentrism argues for low impact technology (but is not anti-technological); it decries bigness and impersonality in all forms (but especially in the city); and demands a code of behavior that seeks permanence and stability based upon ecological principles of diversity and homeostasis" (p. 1).

Of interest in this study are ecocentric attitudes (EcA), which are defined as beliefs that "the environment is in a precarious position, and the impact of humans can be detrimental to the survival of humankind" (Thapa, 1999, p. 432). Consumers with strong EcA tend to believe that human intervention is necessary to protect nature for future generations (Abdul-Muhmin, 2007; Thapa, 2010). Ecocentric attitudes themselves are shown to be significantly but weakly related to behavioral indices comprised of multiple behaviors in categories such as green consumerism, political activism, and environmental education (Thapa, 2010). Table 1 provides a summary of key findings of research in this field, particularly with regard to the antecedents of EcA and behaviors pertinent to this study.

Environmental behaviors are defined as "voluntary actions that are intended to benefit nature or the natural environment in terms of its maintenance and growth" (Naito et al., 2010, p. 995). Recent research suggests that the use of summated behavioral indices may obfuscate the attitude-behavior link and recommends separate analysis for each behavior. Altogether, this serves as the basis for H1, which relates to a

wide variety of environmental behaviors studied in prior research (e.g. Thapa, 2010).

**H1.** Among Judeo-Christians, ecocentric attitudes (EcA) are positively related to (a) voting for a public official due to his/her record on protecting the environment; (b) donating money and/or paying membership dues to environmental/conservation organizations; (c) recycling glass bottles, jars, or aluminum cans; (d) watching TV programs about the environment; (e) switching products because of environmental issues; and (f) buying products made from recycled materials.

## 2.2. Religious commitment, ecocentric attitudes, and environmentally responsible behaviors

The theoretical connection between the Judeo-Christian religion and anti-environmentalism develops from a transformational and debated work by White (1967). White's thesis posits that Western Christianity is strongly rooted in the Biblically literal directive stating that man is to have dominion over the earth and, consequently, humankind's needs should be placed over nature's, regardless of the consequences (an anthropocentric worldview). In this sense, anthropocentric beliefs are a primarily non-flexible fixture in a person's religious schema. Of the world religions, White (1967) asserts Judeo-Christianity to be the "most anthropocentric religion the world has seen" (1205).

Some research supports White's thesis (Eckberg & Blocker, 1989; Hand & Van Liere, 1984), though other research provides alternative explanations for the lower scores that Judeo-Christians display on most environmental measures (Hand & Van Liere, 1984; Shaiko, 1987). In support of White's thesis, worldviews of non-Judeo-Christians evidence support for the environment and support for White's theory. For example, Muslims and Hindus are not opposed to environmental concern (Lal, 1995), and secular individuals' ideologies are more likely to place importance on quality of life, including maintenance of the environment (Inglehart, 1990). Atheists often view mankind as the caretaker of nature (Bramwell, 1989), and those who are environmentally active are generally less likely to be involved in religious activities (Shaiko, 1987). Key empirical findings concerning the relationship between religiosity and environmentalism are shown in Table 2.

A very wide range of measures are used as proxies to assess religiosity, including, but not limited to: religious affiliation (e.g., Catholic, Protestant, Jewish), frequency of church or synagogue attendance, church salience, frequency of prayer, Bible literacy, belief in God, sectarianism, Christian orthodoxy, and scriptural literalism, among others, with religious affiliation being the most commonly utilized measure. Some argue that one

**Table 2**

Summary of key empirical findings regarding the relationship between religiosity and environmentalism.

Source	Findings
Eckberg and Blocker (1989)	Biblical literalism is negatively related to environmental concern (EC) and positively related to subjective importance of religiosity or religious commitment (RC). Measures of religiosity are more strongly related to environmentalism when issues are contextualized to the local community.
Kanagy and Willits (1993)	Religiosity has a negative relationship with EC unless age, education, income, gender, and church attendance are controlled for. Religiosity has a positive, but weak, relationship with environmental behaviors (EB). Religiosity and environmental attitudes (EA) account for more variance in EB than religiosity alone; religiosity has both a direct and indirect impact on EB. Judeo-Christians adopt a degree of anthropocentric orientation, but this does not relate with reduction in EB.
Greeley (1993)	Belief in God, Biblical literalism, Christian affiliation, and gracious image of God are negatively related to EC; however, Roman Catholics show more EC than other religious affiliations. Religiosity is positively related to EC for Christians without rigid religiosity and non-believers.
Kanagy and Nelsen (1995)	Higher religiosity is related to lack of support for increased federal spending to protect the environment, but this may not translate into an individual's lack of EB, and support for relaxed environmental controls. Religiosity is not related to identification of one's self as an environmentalist.
Guth et al. (1995)	Conservative Christians, evangelicals, RC, and age all have a negative relationship with environmentalism. Catholics and urbanites evidence positive EA and EB. Church membership and affiliation show mixed relationships with environmentalism.
Eckberg and Blocker (1996)	Religiosity is not related to EB. Religious liberals tend to be environmental activists. Sectarianism values associate with more support for the economy than for the environment. Religious commitment may contribute to recycling and EB, even if costs increase.
Schultz et al. (2000)	Biblical literalism is negatively related to EA or ecocentric attitudes. Judeo-Christian beliefs may not really be anti-environment due to anthropomorphic orientations but rather due to lower scores on EA scales, indicating lack of awareness rather than lack of concern. The authors call for the New Environmental Paradigm (NEP) scale to be used when studying the relationship between religiosity and environmentalism.
Hunter and Toney (2005)	Mormans show more EC than the general U.S. population; however, they are less likely to evidence EB (e.g., donating money, paying higher prices).
Truelove and Joireman (2009)	The negative relationship between Judeo-Christian orthodoxy and political EB and intentions appears to be mediated by ecocentric attitudes, implying that educational programs heightening awareness of consequences of anti-EB may strengthen the linkages between religiosity, EA, and EB.
Djupe and Hunt (2009)	When social communication within congregational peer groups is controlled, the positive relationship between church membership and pro-environmentalism perspectives is non-significant.

may give time and money to a religious organization, attend services regularly, and frequently associate with other members of the organization, yet not internalize the teachings of the organization (Worthington et al., 2003).

In opposition to White's thesis, some research provides support for alternative explanations of the negative relationship between religiosity, environmental attitudes, and behaviors among Judeo-Christians (Jenkins, 2009). Proposed rationales include (1) the lack of validity and reliability of the religiosity measures used, (2) the use of single-item measures for religiosity and environmental attitudes, (3) the use of summated behavioral indices, (4) non-anthropocentric ecological worldviews such as ecocentrism (Dunlap, 2008; Kanagy & Willits, 1993; Lee, 2008; Schultz, Zelezny, & Dalrymple, 2000; Thapa, 1999, 2010), and (5) lack of awareness and education, particularly of ecocentric consequences (Milfont et al., 2006; Truelove & Joireman, 2009).

This study utilizes a multi-item measure of intrapersonal religious commitment (IaRC) to help overcome many of these issues. IaRC is defined as "the degree to which a person adheres to his or her religious values, beliefs, and practices and uses them in daily living" (Worthington et al., 2003, p. 85). Worthington et al. (2003) find support for the notion that people with higher IaRC tend to evaluate the world around them using religious dimensions and schemas based upon their personally held religious values, thus, incorporating them into their lives. Evidence suggests that such personally held value orientations can be powerful predictors of environmental attitudes and behaviors (Deng, Walker, & Swinnerton, 2006; Fontaine, Duriez, Luyten, Corveleyn, & Hutsebaut, 2005; Fraj & Martinez, 2006; Milfont et al., 2006; Oreg & Katz-Gerro, 2006) and have a fundamental relationship with lifestyle (Fraj & Martinez, 2006; Oreg & Katz-Gerro, 2006). According to Oreg and Katz-Gerro (2006), "Because lifestyles and behavior involve an expression of values, to change one's lifestyle one would first have to address the values that underlie them" (p. 478).

Though research investigating the impact of religiosity on environmental attitudes and behaviors has been contentious (e.g., Gillum & Masters, 2010; Greeley, 1993; Guth, Green, Kellstedt, & Smidt, 1995; Lal, 1995; Ortberg, Gorsuch, & Kim, 2001; Shaiko, 1987), the impact of IaRC as an antecedent of ecocentric attitudes and behaviors remains unexamined. In accord with White (1967), among Judeo-Christians, IaRC is hypothesized to be negatively related to EcA and environmental behaviors.

**H2.** Among Judeo-Christians, intrapersonal religious commitment is negatively related to ecocentric attitudes.

**H3.** Among Judeo-Christians, intrapersonal religious commitment is negatively related to (a) voting for a public official due to his/her record on protecting the environment; (b) donating money and/or paying membership dues to environmental/conservation organizations; (c) recycling glass bottles, jars, or aluminum cans; (d) watching TV programs about the environment; (e) switching products because of environmental issues; and (f) buying products made from recycled materials.

### 3. Methods

#### 3.1. Overview and participants

Survey data were gathered using the referral method. Students enrolled in various marketing courses at a university in the Midwestern U.S. were offered either course credit or entry into a drawing for an iTunes gift card for participation. These students completed one questionnaire themselves and had up to four additional questionnaires completed by other individuals, two of whom were required to be over the age of 40. Using this method, usable data were gathered from 416 respondents, approximately 10% of whom were contacted to verify the authenticity of the questionnaires. Respondents' reported religious affiliation was as follows: 35% Roman Catholic, 16% Protestant, 8% Born-again Christian, 26% Other Christian Denomination, 1% Jewish, 1% Buddhist, 5% other religion, 8% non-religious, and 1% did not provide their religious affiliation; no respondents reported themselves to be either Muslim or Hindu. Since the hypotheses concerned only Judeo-Christians (the first five affiliations referred to above), only these respondents, which represent 86% of the overall sample, were utilized in the data analysis. For these respondents, mean age was 33, 54% were male, and 57% were students. 54% grew up in urban areas, while 46% grew up in rural areas, and 75% lived in urban areas while 25% in rural areas at the time of the study.

#### 3.2. Measures

Ecocentric attitude (EcA) was measured using the ecocentric scale established by Thapa (2010), which is a subscale of the widely and

long-utilized New Ecological Paradigm (NEP) scale (Dunlap, 2008; Dunlap et al., 2000). Use of the subscale in such a manner is supported by research which finds that the ecocentric items form a coherent factor with good reliability (La Trube & Acott, 2000). Intrapersonal religious commitment was measured by the six-item intrapersonal subscale taken from the Religious Commitment Inventory as utilized by Worthington et al. (2003). Research finds support for the scale's construct validity; criterion validity with measures of church attendance, spiritual intensity, and single-item self-rated religious commitment and religiosity; discriminant validity from single-item measures of spirituality; and temporal stability or internal reliability; and finds no significant relationship ( $p = -.02$ ) between responses to the scale and the 33-item Marlow–Crowne social desirability scale (Davis, Worthington, Hook, & Van Tongeren, 2009). Both the EcA and IaRC scales are anchored by “Strongly Disagree” (1) and “Strongly Agree” (7).

These scales were first subjected to an exploratory factor analysis using principal axis factoring, which revealed two factors with an eigenvalue greater than one, accounting for 75.1% of the variance in the items. Following the use of promax rotation, which was used since the factors were assumed to be correlated, all items loaded above .70 on their respective factors with no cross-loadings greater than .10. Reliability, as evidenced by coefficient alpha and mean inter-item correlation, was high for both scales. Information regarding item and scale performance is provided in Table 3.

Both measures were subjected to a confirmatory factor analysis using maximum likelihood estimation of the covariance matrix. The fit of the model was good ( $\chi^2 = 173.58$ ,  $df = 58$ ,  $p < .001$ ; RMSEA = .076; CFI = .97; NNFI = .96). The standardized construct correlation matrix is shown in Table 4 with construct means and standard deviations. In this matrix, the diagonal values represent the AVE for each construct, and the values below the diagonal are the correlation estimates with *t*-values shown in italics. Standardized loading estimates were greater than .70 for all items, and the AVE of both constructs was greater than the squared correlation coefficient between them. Thus, the measures demonstrate unidimensionality, convergent validity, and discriminant validity (Hair, Black, Babin, Anderson, & Tatham, 2006).

The six environmental behaviors investigated, also studied by Thapa (2010), were queried using single-item self-reported measures since past behaviors, rather than latent constructs, were concerned. Items included “Voted for a public official due to his/her record on protecting the environment,” “Donated money or paid membership dues to an environmental/conservation organization,” “Recycled glass bottles, jars, or aluminum cans,” “Watched TV programs about the environment,” “Switched products because of environmental issues,” and “Bought products made from recycled materials” and were anchored by “Never” (1)

**Table 4**  
Standardized construct correlation matrix.

	Intrapersonal religious commitment	Ecocentric attitude
Intrapersonal religious commitment	.80	
Ecocentric attitude	–.09	.60
Mean	4.10	4.41
Standard deviation	1.74	1.36

and “Very Often” (7). Means and standard deviations are shown in Table 5.

#### 4. Results

In order to provide additional insight, this research examines the hypotheses both with and without the inclusion of specific control variables which prior research indicates may have an impact on EcA and environmental behaviors. The hypotheses are first tested without any control variables and are then reexamined using age, gender, and urban/rural residence as control variables. Males are coded as ‘0’ and females as ‘1’, and urban consumers are coded as ‘0’ and rural consumers as ‘1’.

##### 4.1. Without control variables

Hypotheses 1 and 3 were first examined via six multiple regression analyses using both IaRC and EcA as the independent variables and each respective environmental behavior as the dependent variable. The results are summarized in Table 6. These analyses indicate that of the six behaviors examined, the variance explained for two of these is notably higher than the others: switching products because of environmental issues ( $R^2 = .144$ ) and buying products made from recycled materials ( $R^2 = .126$ ).

As expected, EcA has a significant positive relationship with all six of the environmental behaviors investigated, supporting H1a–f. The sizes of these effects range from .084 to .347, which are small to moderate (Hair et al., 2006). Counter to expectations, the effect of IaRC on environmental behaviors (H3a, H3b, H3c, and H3f) is either positive or nonexistent; thus, the data do not support H3. This finding supports the view that Judeo-Christians who evidence their religion in their daily lives will be more likely to donate money to environmental causes and may be more likely to, in descending order, buy recycled products, recycle, and vote for officials with pro-environmental records. Of

**Table 3**  
Measure performance.

Measure	Coefficient alpha	Mean inter-item correlation	EFA item loading	CFA item loading
<i>Intrapersonal religious commitment</i>	.96	.80		
My religious beliefs lie behind my whole approach to life.			.90	.90
I spend time trying to grow in understanding of my faith.			.91	.90
It is important to me to spend periods of time in private religious thought and reflection.			.89	.89
Religious beliefs influence all my dealings in life.			.91	.91
Religion is especially important to me.			.91	.91
I often read about my faith.			.85	.85
<i>Ecocentric attitude</i>	.90	.60		
The earth is like a spaceship with very limited room and resources.			.71	.71
If things continue on their present course, we will soon experience a major environmental catastrophe.			.85	.84
We are approaching the limit of the number of people that the earth can support.			.72	.73
The balance of nature is very delicate and easily upset.			.84	.84
When humans interfere with nature, disastrous consequences are often produced.			.77	.77
Humans are severely abusing the environment.			.74	.75

**Table 5**  
Descriptive statistics for environmental behaviors.

	Mean (seven-point scale)	Standard deviation
Voted for a public official due to his/her record on protecting the environment	3.02	1.75
Donated money and/or paid membership dues to environmental/conservation organizations	3.02	1.86
Recycled glass bottles, jars, or aluminum cans	5.28	1.72
Watched TV programs about the environment	4.25	1.76
Switched products because of environmental issues	3.81	1.81
Buying products made from recycled materials	4.83	1.54

interest is the finding that the impact of IaRC on donating behavior is actually greater than the comparable effect of EcA.

To examine H2, a regression analysis using IaRC as the independent variable and EcA as the dependent variable was conducted. Results show a moderately significant, albeit weak, negative relationship between IaRC and EcA (Standardized  $\beta = -.091$ ;  $p = .064$ ;  $F = 3.450$ ;  $df = 1,415$ ;  $R^2 = .008$ ), providing moderate support for H2. This finding is particularly intriguing in light of the initial finding that IaRC is positively related to several environmental behaviors.

#### 4.2. With control variables

Following the protocol of several prior studies, as noted in Table 1, age, gender, and urban/rural residence are used as control variables in a reexamination of the hypotheses. Following the order of the above analysis, H1 and H3 were examined via six multiple regression analyses using IaRC, EcA, and the three control variables as the independent variables and each respective environmental behavior as the dependent variable. Ecocentric attitude maintains a significant positive relationship with five environmental behaviors; no relationship exists between ecocentric attitude and donating money and/or paying membership dues to an environmental organization. With the inclusion of the control variables, the data support H1 with the exception of H1b.

In this analysis, the effect of IaRC on environmental behaviors disappears, negating empirical support for H3 and supporting the notion that individuals who evidence their religiosity in their daily lives are no more or less likely to undertake environmental behaviors than others. This finding is particularly interesting in that Kanagy and Nelsen (1995) find that by introducing controls, the relationship between religious commitment and environmental behaviors is stronger. Results of this test are shown in Table 7.

To reexamine H2, a regression analysis using IaRC as the independent variable and EcA as the dependent variable was conducted. The results indicate that the relationship between IaRC and EcA is not significant

(Standardized  $\beta = -.064$ ;  $p = .250$ ), providing no support for H2 and implying that the manifestation of religion in daily activities by Judeo-Christians bears no relationship with concern of the environment.

## 5. Discussion and future research

This research investigates the relationships between a specific form of religiosity (intrapersonal religious commitment; IaRC), a particular environmental worldview (ecocentric attitudes; EcA), and six wide-ranging environmental consumption behaviors. In an attempt to overcome weaknesses of prior studies and to clarify specific relationships, this study uses established multi-item measures for both IaRC and EcA and does not utilize summated behavioral indices. Also, this research expands investigation of the interrelationships between IaRC, EcA, and environmental behaviors to include the use of control variables, which substantially impacts the results.

First, despite their general statistical significance, the relationships between EcA and the six environmental behaviors investigated are relatively weak, a finding confirmed in other research (e.g., Thapa, 1999). Interestingly, a non-significant relationship exists between EcA and donating money and/or paying membership dues to environmental organizations. This behavior may require the greatest resource commitment of any of the behaviors investigated. Also, the addition of the control variables does not have a substantial effect on the impact of EcA on the behaviors. Gender is the strongest demographic variable affecting environmental behaviors but exerts asymmetric effects. Younger men who are more concerned about the environment are more likely to vote for officials who support environmental positions, and among females of all ages, pro-environmental attitudes lead to greater recycling and purchasing of environmentally friendly products. Voting is the only behavior measured significantly influenced by age; older consumers are less likely to vote for officials who support environmental causes.

Second, findings negate the long-standing notion of a negative relationship between the Judeo-Christian faith and regard for the environment. Among Judeo-Christians, when age, gender, and urban/rural residence are controlled, individuals who manifest their religious beliefs in their daily activities appear to neither embrace ecocentrism nor rely on their religious faith to substantiate environmental behaviors. In order to provide greater clarity regarding the role of religious commitment in relation to environmental attitudes and behavior, as well as other consumption-related behavior, marketing researchers should avoid treating religious commitment as a single-item or strictly categorical measure. Utilizing multi-item scales with established psychometric properties may help to clarify relationships that would otherwise appear to be enigmatic. A need also exists for researchers investigating religiosity to include the judicious use of relevant control variables in their analyses as doing so can dramatically alter research findings. Further, when environmental behaviors are studied, they

**Table 6**  
Multiple regression analyses results without control variables.

Dependent variable	Standardized $\beta$ : religious commitment (p-value)	Standardized $\beta$ : attitude toward environment (p-value)	F (p-value)	df	R <sup>2</sup>
Voted	.10 (p = .06)	.27 (p < .01)	15.46 (p < .00)	2,353	.08
Donated	.11 (p = .03)	.08 (p = .11)	3.46 (p = .03)	2,353	.02
Recycled	.10 (p = .07)	.21 (p < .00)	9.70 (p < .00)	2,353	.05
Watched TV programs	-.01 (p = .79)	.32 (p < .00)	19.60 (p < .00)	2,353	.10
Switched products	.05 (p = .31)	.38 (p < .00)	29.71 (p < .00)	2,353	.14
Bought recycled products	.09 (p = .06)	.35 (p < .00)	25.44 (p < .00)	2,353	.13

**Table 7**  
Multiple regression analyses results with control variables.

Dependent variable	Standardized $\beta$ : religious commitment (p-value)	Standardized $\beta$ : attitude toward environment (p-value)	Standardized $\beta$ : age (p-value)	Standardized $\beta$ : gender [Male = 0, Female = 1] (p-value)	Standardized $\beta$ : urban/rural residence [Urban = 0, Rural = 1] (p-value)	F (p-value)	df	R <sup>2</sup>
Voted	.07 (p = .22)	.28 (p < .01)	-.17 (p = .00)	-.13 (p = .02)	.01 (p = .92)	9.27 (p < .01)	5,344	.12
Donated	.10 (p = .08)	.10 (p = .07)	-.09 (p = .13)	-.10 (p = .06)	.04 (p = .49)	2.56 (p = .03)	5,344	.04
Recycled	.06 (p = .26)	.20 (p < .01)	-.02 (p = .07)	.16 (p = .00)	-.02 (p = .71)	5.94 (p < .01)	5,344	.08
Watched TV programs	-.05 (p = .37)	.32 (p < .01)	-.10 (p = .08)	-.03 (p = .60)	.03 (p = .53)	8.40 (p < .01)	5,344	.11
Switched products	.01 (p = .88)	.37 (p < .01)	-.08 (p = .11)	.10 (p = .04)	.02 (p = .68)	13.38 (p < .01)	5,344	.17
Bought recycled products	.07 (p = .21)	.34 (p < .01)	-.05 (p = .39)	.07 (p = .19)	-.03 (p = .53)	10.48 (p < .01)	5,344	.13

should be measured separately; this research shows that each behavior may have different antecedent effects.

These findings also have notable implications for both marketing practitioners and environmental educators. First, encouraging consumers to become more concerned about environmental issues seems to indeed lead to greater participation in a variety of pro-environmental actions, though other factors (e.g., ease of ability to recycle, referent group influence) may well have a stronger impact on such actions. Specifically, sensitizing consumers to an ecocentric worldview appears to encourage higher levels of green consumerism in the areas of voting behavior, recycling, eco-friendly TV programming, switching purchases to eco-friendly products, and buying eco-friendly products. Marketers and educators with the felt responsibility to encourage these behaviors should espouse ecocentric values and perspectives through formal and information communication channels and also appropriately focus on eco-education initiatives. For instance, marketers of environmentally friendly products should focus on the need for consumers to consider how their purchases will impact the environment and how their products are complementary with the natural world (e.g., not resource intensive, respectful of flora and fauna). Such firms must take on the role not only of marketer, but also of educator. Behaviors which require significant resource commitment, like donating money to an environmental organization, seem to require a slightly different strategy. In such instances, the relative impact of religious commitment, ecocentric attitudes, and gender on ecocentric behaviors are all similar. In this circumstance, appeals to Judeo-Christians' religious beliefs, consumers' environmental concern, and men seem most likely to be successful.

Second, marketing practitioners whose efforts are aimed at promoting most environmentally friendly products need not be concerned with religious commitment potentially espoused by consumers, at least among Judeo-Christians. Both consumers who are highly religious and those who are not appear to be equally responsive to communication appeals related to superseding environmental issues, concern for the environment, and encouragement of environmentally friendly behaviors, unless the behavior is particularly resource intensive, as noted above. As a result, subtle religious references will likely not add to the effectiveness of most pro-environmentalism messages.

Finally, awareness or communication programs for recycling or switching to more environmentally friendly products should be based upon a segmentation schema constructed in part on gender while those for advertising eco-friendly TV programs or encouraging switching purchasing behavior to eco-friendly products should be based upon a segmentation schema using environmental attitudes. The relationships between IaRC, EcA and behaviors might be strengthened through awareness efforts, an avenue for additional research. Another area for future research may include the relationships between EcA and ethical dimensions of consumer behavior (Lundmark, 2007).

## 6. Limitations

Though the data in this study account for a significant portion of the variance in consumers' pro-environmental behaviors, the majority of the variance remains unaccounted for. Future research is needed to better account for this unexplained variance. Also, since only cross-sectional data are investigated in this research, causality among the variables cannot be conclusively determined, and future research should study these variables with time-series data to examine the causal nature of the relationships between them. Lastly, though the sample used in this research represents a variety of Judeo-Christian faiths, which is useful for examining the general effects outlined here, a comparison of different Judeo-Christian faiths may yield differing results.

## References

- Abdul-Muhmin, A. G. (2007). Explaining consumers' willingness to be environmentally friendly. *International Journal of Consumer Studies*, 31(3), 237–247.
- Bailey, J. M., & Sood, J. (1993). The effects of religious affiliation on consumer behavior: A preliminary investigation. *Journal of Managerial Issues*, 5(3), 328–352.
- Berenguer, J. (2007). The effect of empathy in proenvironmental attitudes and behaviors. *Environment and Behavior*, 39(2), 269–283.
- Bramwell, A. (1989). *Ecology in the 20th century: A history*. New Haven, CT: Yale University Press.
- Casey, P., & Scott, K. (2006). Environmental concern and behaviour in Australian sample within an ecocentric–anthropocentric framework. *Australian Journal of Psychology*, 58(2), 57–67.
- Davis, D. E., Worthington, E. L., Jr., Hook, J. N., & Van Tongeren, D. R. (2009). The dedication to the sacred (DS) scale: Adapting a marriage measure to study relational spirituality. *Journal of Psychology and Theology*, 37(4), 265–275.
- Deng, J., Walker, G. J., & Swinnerton, G. (2006). A comparison of environmental values and attitudes between Chinese in Canada and Anglo-Canadians. *Environment and Behavior*, 38(1), 22–47.
- Dietz, T., Kalof, L., & Stern, P. C. (2002). *Gender, values, and environmentalism*. Soc Sci Q, 83. (pp. 353–364). : Blackwell Publishing Limited.
- Djupe, P. A., & Hunt, P. K. (2009). Beyond the Lynn White thesis: Congregational effects on environmental concern. *Journal of the Scientific Study Religion*, 48(4), 670–686.
- Dunlap, R. E. (2008). The new environmental paradigm scale: From marginality to worldwide use. *The Journal of Environmental Education*, 40(1), 3–18.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425–442.
- Eckberg, D. L., & Blocker, T. J. (1989). Varieties of religious involvement and environmental concerns: Testing for Lynn White Thesis. *Journal of the Scientific Study Religion*, 28(4), 509–518.
- Eckberg, D. L., & Blocker, T. J. (1996). Christianity, environmentalism, and the theoretical problem of fundamentalism. *Journal of the Scientific Study Religion*, 35, 343–355.
- Essoo, N., & Dibb, S. (2004). Religious influences on shopping behaviour: An exploratory study. *Journal of Marketing Management*, 20(7/8), 683–712.
- Fernández-Manzanal, R., Rodríguez-Barreiro, L., & Carrasquer, J. (2007). Evaluation of environmental attitudes: Analysis and results of a scale applied to university students. *Science Education*, 91(6), 988–1009.
- Fontaine, J. R. J., Duriez, B., Luyten, P., Corveleyn, J., & Hutsebaut, D. (2005). Consequences of a multidimensional approach to religion for the relationship between religiosity and value priorities. *The International Journal for the Psychology of Religion*, 15(2), 123–143.
- Fraj, E., & Martínez, E. (2006). Environmental values and lifestyles as determining factors of ecological consumer behaviour: An empirical analysis. *Journal of Consumer Marketing*, 23(3), 133–144.

- García-Mira, R., Real, J. E., & Romay, J. (2005). Temporal and spatial dimensions in the perception of environmental problems: An investigation of the concept of environmental hyperopia. *International Journal of Psychology*, 40(1), 5–10.
- Gatersleben, B., Steg, L., & Vlek, C. (2002). Measurement and determinants of environmentally significant consumer behavior. *Environment and Behavior*, 34(3), 335.
- Gillum, R. F., & Masters, K. S. (2010). Religiousness and blood donation: Findings from a national survey. *Journal of Health Psychology*, 15(2), 163–172.
- Greeley, A. (1993). Religion and attitudes toward the environment. *Journal of the Scientific Study Religion*, 32(1), 19–28.
- Gupta, S., & Ogden, D. T. (2009). To buy or not to buy? A social dilemma perspective on green buying. *Journal of Consumer Marketing*, 26(6), 376–391.
- Guth, J. L., Green, J. C., Kellstedt, L. A., & Smidt, C. E. (1995). Faith and the environment: Religious beliefs and attitudes on environmental policy. *American Journal of Political Science*, 39(2), 364–382.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River: Pearson Prentice Hall.
- Hand, C. M., & Van Liere, K. D. (1984). Religion, mastery-over-nature, and environmental concern. *Social Forces*, 63(2), 555–570.
- Hirschman, E. C. (1982). Religious affiliation and consumption processes: A preliminary paradigm. In J. Sheth (Ed.), *Research in marketing*. Chicago, IL: JAI Press.
- Hunter, L. M., & Toney, M. B. (2005). Religion and attitudes toward the environment: A comparison of Mormons and the general U.S. population. *The Social Science Journal*, 42, 25–38.
- Inglehart, R. (1990). *Culture shift in advanced industrial society*. Princeton, New Jersey: Princeton University Press.
- Jenkins, W. (2009). After Lynn White: Religious ethics and environmental problems. *Journal of Religious Ethics*, 37(2), 283–309.
- Kanagy, C. L., & Nelsen, H. M. (1995). Religion and environmental concern: Challenging the dominant assumptions. *Review of Religious Research*, 37(1), 33–45.
- Kanagy, C. L., & Willits, F. K. (1993). A “greening” of religion? Some evidence from a Pennsylvania sample. *Social Science Quarterly*, 74(3), 674–683.
- Kinnear, T. C., Taylor, J. R., & Ahmed, S. A. (1974). Ecologically concerned consumers: Who are they? *Journal of Marketing*, 38(2), 20–24.
- La Trube, H. L., & Acott, T. G. (2000). A modified NEP/DSP environmental attitudes scale. *The Journal of Environmental Education*, 32(1), 12–20.
- Lal, D. (1995). Eco-fundamentalism. *International Affairs*, 71(3), 515–528.
- Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, 18(6), 503–520.
- Lee, E. B. (2008). Environmental attitudes and information sources among African American college students. *The Journal of Environmental Education*, 40(1), 29–42.
- Lundmark, C. (2007). The new ecological paradigm revisited: Anchoring the NEP scale in environmental ethics. *Environmental Education Research*, 13(3), 329–347.
- Mainieri, T., Barnett, E. G., Valdero, T. R., Unipan, J. B., & Oskamp, S. (1997). Green buying: The influence of environmental concern on consumer behavior. *Journal of Social Psychology*, 137(2), 189–204.
- McCarty, J. A., & Shrum, L. J. (2001). The influence of individualism, collectivism, and locus of control on environmental beliefs and behavior. *Journal of Public Policy & Marketing*, 20(1), 93–104.
- Milfont, T. L., Duckitt, J., & Cameron, L. D. (2006). A cross-cultural study of environmental motive concerns and their implications for proenvironmental behavior. *Environment and Behavior*, 38(6), 745–767.
- Naito, T., Matsuda, T., Intasuwan, P., Chuawanlee, W., Thanachanan, S., Ounthitwatt, J., et al. (2010). Gratitude for, and regret toward, nature: Relationships to proenvironmental intent of university students from Japan. *Social Behavior and Personality*, 38(7), 993–1008.
- O’Riordan, T. (1981). *Environmentalism* (2nd ed.). London: Pion Limited.
- Oreg, S., & Katz-Gerro, T. (2006). Predicting proenvironmental behavior cross-nationally: Values, the theory of planned behavior, and value-belief-norm theory. *Environment and Behavior*, 38(4), 462–483.
- Ortberg, J. C., Jr., Gorsuch, R. L., & Kim, G. J. (2001). Changing attitude and moral obligation: Their independent effects on behavior. *Journal of the Scientific Study Religion*, 40(3), 489–496.
- Robinot, E., & Giannelloni, J. (2009). Attitude toward environmentally friendly hospitality management: A measurement scale. *Recherche et Applications en Marketing (English Edition)*, 24(2), 29–50.
- Schultz, P. W., & Zelezny, L. (1999). Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. *Journal of Environmental Psychology*, 19, 255–265.
- Schultz, P. W., Zelezny, L., & Dalrymple, N. J. (2000). A multinational perspective on the relation between Judeo-Christian religious beliefs and attitudes of environmental concern. *Environment and Behavior*, 32(4), 576–591.
- Schwartz, S. H., & Huisman, S. (1995). Value priorities and religiosity in four western religions. *Social Psychology Quarterly*, 58(2), 88–107.
- Shaiko, R. G. (1987). Religion, politics, and environmental concern: A powerful mix of passions. *Social Science Quarterly*, 68(2), 244–262.
- Sood, J., & Nasu, Y. (1995). Religiosity and nationality: An exploratory study of their effect on consumer behavior in Japan and the United States. *Journal of Business Research*, 34(1), 1–9.
- Stern, P. C., & Dietz, T. (1995). The new ecological paradigm in social-psychological context. *Environment and Behavior*, 27(6), 723–744.
- Swimberghe, K., Sharma, D., & Flurry, L. (2009). An exploratory investigation of the consumer religious commitment and its influence on store loyalty and consumer complaint intentions. *Journal of Consumer Marketing*, 26(5), 340–347.
- Thapa, B. (1999). Environmentalism: The relation of environmental attitudes and environmentally responsible behaviors among undergraduate students. *Bulletin of Science Technology Society*, 19(5), 426–439.
- Thapa, B. (2010). The mediation effect of outdoor recreation participation on environmental attitude-behavior correspondence. *The Journal of Environmental Education*, 41(3), 133–150.
- Truelove, H. B., & Joireman, J. (2009). Understanding the relationship between Christian Orthodoxy and environmentalism: The mediating role of perceived environmental consequences. *Environment and Behavior*, 41(6), 806–820.
- White, L., Jr. (1967). The historical roots of our ecologic crisis. *Journal of Science*, 155(3767), 1203–1207.
- Wilson, K. E. (2003). The relationship between environmental concern and empathy. *Australian Journal of Psychology*, 55–69.
- Worthington, E. L., Jr., Wade, N. G., Hight, T. L., Ripley, J. S., McCullough, M. E., Berry, J. W., et al. (2003). The religious commitment inventory-10: Development, refinement, and validation of a brief scale for research and counseling. *Journal of Counseling Psychology*, 50(1), 84–96.