



Religion and motives for sustainable behaviors: A cross-cultural comparison and contrast



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ABSTRACT

Many previous studies investigate altruism's influence on sustainable behaviors, yet few studies examine the more foundational relation between religion and sustainable consumption-related behaviors. Therefore, this paper builds on values research, self-determination theory, and inoculation theory to examine the link between religion and sustainable behaviors from a sample of both South Korean and US consumers (N = 388, average age = 33). Results show a moderating effect of religiosity with consumers who are more religious being more likely to participate in sustainable behaviors (e.g., purchasing green cleaning supplies, recycling, purchasing organic foods). In contrast to Christians and Atheists, highly religious Buddhists more likely participate in sustainable behaviors, with little difference between locations. Interestingly, differences exist with minority religions (e.g., Buddhists in the US) that change agents must note to maximize the effectiveness of campaigns encouraging sustainable behaviors.

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1. Introduction

Understanding the motives for sustainable behaviors is becoming increasingly important. The future of humans and the planet, as well as many other species, may depend on an accurate and thorough understanding of sustainable behaviors (Kahle & Gurel-Atay, 2014). Some indicators give reason for optimism. A recent Nielsen study of 25,000 people in 51 countries indicates that 66% of consumers across the globe are concerned about climate change and global warming (Frighetto, 2011). Of the greatest concerns to these consumers are water shortages, waste packaging, and pesticide use in food and agriculture. In addition, roughly three-quarters of respondents indicate concern for air and water pollution. Given sustainability's prominence in the eyes of the consumers and the importance of excessive consumption as a threat to sustainability, understanding foundational consumer motives (e.g., core values) is critical for consumer widespread adoption of sustainable behaviors.

Prior studies investigate the link between sustainable behaviors and consumers' basic demographic and psychographic traits

(e.g., McDonald, Oates, Young, & Hwang, 2006; Tanner & Wölfling Kast, 2003) as well as extrinsic rewards as an incentive to increase participation in sustainable behaviors (Thøgersen, 2005); however, research inadequately investigates intrinsic motivators such as a consumer's core values, rooted in fundamental belief systems (e.g., religion) (Engelland, 2014; Minton & Kahle, 2013). Religiosity reflects fundamental belief systems. In this paper, religiosity is examined as a potential missing link in the sustainability research stream. This research considers how consumers' religious principles and values influence sustainable consumption behaviors in a systematic fashion. Therefore, the purposes of this paper are (1) to examine the influence of religion and degree of religious belief on sustainable behaviors, (2) to investigate religion's varying influence on sustainable behaviors requiring various levels of effort, and (3) to explore potential cultural influences to the relation between religion and sustainable behaviors with adult samples in both Asia and America.

2. Sustainability and values

As the world population continues to rise and resources decrease, sustainability is becoming increasingly important (Kahle & Gurel-Atay, 2014; Prothero et al., 2011). However, research into the intrinsic and extrinsic motives for such sustainable behaviors is still embryonic. Before delving into motives, an understanding of sustainability is in order. The United Nations defined sustainability in 1987 as "development

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that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). Thus, even if sustainability may be passé in some circles, the concept of preserving resources for future generations is still imperative.

Companies today benefit from the increasing importance of sustainability. This *sustainability craze* encourages tactics such as developing naturally-sourced products and services, using recycled packaging, and designing communications emphasizing environmental preservation. For consumer motives, sustainability involves purchasing and using green products and services, recycling packaging and containers produced by businesses (whether environmentally-focused or not), and contributing to for-profit and non-profit environmental organizations, among other behaviors. Understanding consumer motives for participating in these sustainable behaviors helps business and the environment alike by increasing purchase of sustainable products and services as well as participation in behaviors that help preserve earth's limited resources. Going forward, this paper builds off the United Nation's definition of sustainability and uses the term *sustainable behaviors* to refer to consumer actions that meet the needs of the present without compromising the ability of future consumer generations to meet their own needs. **Sustainability's core is about consumption.**

With this understanding of sustainable behaviors, **this paper turns to examining the gap between values and attitudes, particularly driven by religious values.** Prior research examines extrinsic attitudinal and behavioral motives such as price savings and public policy changes as well as extrinsic disincentives such as fines for not being sustainable (Thøgersen, 2005). Other research examines several intrinsic motivators (e.g., personal satisfaction from preserving natural habitats for wild animals); however, most studies use student samples or lab studies (Thøgersen, 2005), potentially clouding true intrinsic motivators.

Sheth, Sethia, and Srinivas (2011) emphasize the importance of understanding the consumer as critical to intrinsically motivating sustainable behaviors. These authors define a term "customer-centric sustainability" as "a metric of performance based on sustainability outcomes that are personally consequential for customers and result from customer directed business actions" (p. 24). Given this consumer focus as the key to understanding intrinsic motivation, examining core values also is vital, **as such values are the driving force behind consumer behaviors** (Kahle, 1996; Kahle & Xie, 2008; Sheth, 1983).

3. Religion and sustainability

A key determinant of one's core values is a belief system, such as religion (Minton & Kahle, 2013; Roccas, 2005; Saroglou, Delpierre, & Dermelle, 2004). Although the term belief system is often synonymous with religious beliefs, non-religious backgrounds also carry a belief system (i.e., beliefs about the scientific origins of earth) (Minton & Kahle, 2013). Prior research emphasizes the importance of understanding religion as a key determinant of core values influencing consumer attitudes and behavior (Djupe & Gwiasda, 2010; Hirschman, Ruvio, & Touzani, 2011). This research stream is similar to the theory of reasoned action that proposes that consumer values and attitudes motivate behavior (Ajzen & Fishbein, 1980).

Religion and culture appear to be the same concept, but the two value systems differ in locus. Culture comes specifically from a geographic location, whereas religion transcends geographic bounds, thereby making the latter more applicable to marketers, regardless of location. Additionally, religious values are rooted in religious scripture that provide consistent insight into beliefs, whereas culture often represents a milieu of transitory beliefs that incorporate religious beliefs.

Relating to sustainable consumption, religious scripture discusses views toward sustainability and sustainability-related values (Djupe & Gwiasda, 2010; Wolkomir, Futreal, Woodrum, & Hoban, 1997;

Woodrum & Wolkomir, 1997), thereby suggesting that core religious beliefs may influence sustainable purchase and non-purchase behaviors.

With differences among specific religious affiliations, James (1902/2004) describes that Western religions (Christianity, Judaism, Islam) believe that God created nature and therefore God and humans hold a superior position to nature. Eastern religions (Buddhism, Hinduism, Taoism), on the other hand, follow a pantheistic view that God is in and through everything, including nature. Sarre (1995) expands on this distinction between Western and Eastern religions, identifying that Western religions follow *White's thesis* (1967) that God created nature, God gave control of nature to humans, and therefore Western religions should be less apt to be environmentally friendly and more willing to alter the environment. More specifically, White (1967) explores Christian doctrine, with a focus on the book of Genesis in the Bible, finding repetition of human's dominance over nature (e.g., humans appointed to name animals, humans exploiting nature for their own benefit) and positing that Christians should be less sustainable as a result. More recent studies confirm these conjectures with Christians participating in fewer sustainable behaviors than people with other belief systems (Eckberg & Blocker, 1989; Wolkomir et al., 1997).

However, more recent competing research shows that participation in sustainable behaviors depends on personal factors, including values – suggesting that more altruistic consumers likely participate in more sustainable behaviors (Corraliza & Berenguer, 2000; Kollmuss & Agyeman, 2002). Additionally, values related to helping others lead to increased participation in sustainable behaviors (Granzin & Olsen, 1991; Kollmuss & Agyeman, 2002).

Looking at the antecedents to altruism and values of helping, strong intrinsic religious beliefs are driving causes of altruism and helping behaviors (Blogowska & Saroglou, 2011). Although religion and altruism closely intertwine, these constructs are not the same. Religious and non-religious people alike can be altruistic. Therefore, **this paper seeks to investigate how religious values, rooted in core belief systems, influence sustainable behaviors and help explain the gap between values and sustainable attitudes in the values–attitudes–behavior hierarchy** (Prothero et al., 2011). Religion is more informative to marketers and change agents because one's religious values are easier to ascertain through self-reports and secondary sources than one's altruism level. In addition, religion transcends geographic bounds, providing applicability to marketers across the globe.

Tanner and Wölfling Kast (2003) develop a comprehensive model of participation in sustainable behaviors showing that personal norms (often rooted in values), education, employment status, and place of residence potentially influence sustainable consumption. **Recently, Western religions have started encouraging sustainable behaviors** (Djupe & Gwiasda, 2010). For example, the Genesis Covenant encourages churches to reduce their environmental footprint (Wilson, 2012). As a result, this competing research shows that highly religious consumers may be more likely to participate in sustainable behaviors than less religious consumers.

Regardless of this connection between religious values, altruism, and sustainability, research on consumers adhering to Eastern religions points to higher participation in sustainable behaviors. Eastern religious groups follow the pantheistic view that destroying an element of nature is destroying part of God or other divine being (Hunt & Penwell, 2008; Sarre, 1995) and, therefore, should be more likely to participate in environmentally-friendly efforts. Because sustainable consumption is a means to express environmentally-friendly attitudes and beliefs, consumers adhering to Eastern religious beliefs are expected to participate significantly more in sustainable behaviors in contrast to consumers adhering to Western religious beliefs.

In contrast to religious consumers, Atheists (believing that a God does not exist) should be more likely to believe that the world needs preservation for generations to come and be more sustainable

as a result. Greeley (1993) confirms that Atheists are more concerned about the environment in contrast to religious consumers. Additionally, non-religious belief systems of environmentalism have emerged that, in essence, worship nature. These environmentalism attitudes possibly are linked to the non-believer's view that human life evolved out of natural elements (e.g., the Big Bang theory), and caring for the environment to sustain life is only rational (Dunlap, 2004). At the same time, Atheists do not have core doctrine driving behaviors, and thus the connection between beliefs and behaviors likely is weaker than for religious consumers.

Although sustainability research explores sustainable consumption (McDonald et al., 2006; Prothero et al., 2011), little research assesses how religious affiliation could act as an antecedent to participation in sustainable behaviors (Engelland, 2014; Minton & Kahle, 2013). Djupe and Gwiasda (2010) examine the motives for religious organizations to encourage sustainability among followers. Kalamas, Cleveland, and Laroche (2014) explore how religious beliefs influence attributions of environmental responsibility (e.g., to a God, to corporations). In one study most closely relating to the research herein, Martin and Bateman (2014) find that consumers having high intrinsic religiosity also have higher eco-centric attitudes and behaviors; however, the sample for this study was a referral-based college student sample in the Midwest United States, meaning that college students completed the survey and were asked to give the survey to two additional adults over the age of 40. Given this type of sampling, most adults in their mid-20s (college-aged) to 30s likely were excluded from analysis. Therefore, the present article builds on Martin and Bateman's (2014) research in a more representative adult sample and compares data across two countries: the US and South Korea. Divergent research findings on religion and sustainability inform two competing hypotheses.

H1a. Religious affiliation influences participation in sustainable behaviors whereby Eastern religious consumers and Atheists are more sustainable in contrast to Western religious consumers.

H1b. Religious affiliation influences participation in sustainable behaviors whereby Eastern and Western religious consumers are more sustainable in contrast to Atheists.

Because the relation between core values and behavior depends upon how strongly a consumer holds to the core values, taking degree of religious belief into consideration is important. Numerous studies show the importance of incorporating religiosity into research on religion (Martin & Bateman, 2014; Minton & Kahle, 2013). Thus, religiosity should also influence sustainable consumption (e.g., recycling behavior, purchase of organic produce, volunteering with a sustainable charity). As described before, Buddhists follow the pantheistic view that God exists in and through all elements of nature (Sarre, 1995). In other words, a highly religious Buddhist might believe that buying an environmentally-friendly detergent or an organically grown apple shows respect for God because purchasing such items respects the nature in which God resides; however, a less religious Buddhist may see the higher cost of these environmentally-friendly products and focus more on the increased cost than a desire to respect God and nature. As a result, highly religious Buddhists (as well as consumers of other Eastern religions following pantheistic views of God) should participate in more sustainable behaviors than less religious Buddhists (and other Eastern religious consumers). Similarly, highly religious consumers of Western religions (e.g., Christians) should convey their core values more strongly than less religious Western consumers.

Depending on which competing hypothesis is confirmed, highly religious consumers of Western religions, in contrast to their less religious counterparts, will either hold less sustainable views of dominion over nature (James, 1902/2004) or more sustainable views of the connection between religion, altruism, and sustainability (Corraliza & Berenguer,

2000; Kollmuss & Agyeman, 2002). Therefore, competing interaction hypotheses with religiosity in accordance with competing hypotheses H1a and H1b are:

H2a. Religiosity moderates the relation between religious affiliation and sustainable behaviors whereby Atheists and highly religious consumers of Eastern religions participate in more sustainable behaviors than less religious consumers of Eastern religions and all consumers of Western religions.

H2b. Religiosity moderates the relation between religious affiliation and sustainable behaviors whereby highly religious consumers of Eastern and Western religions participate in more sustainable behaviors than Atheists and less religious consumers of Eastern and Western religions.

Although religious affiliation and religiosity should influence participation in all sustainable behaviors, religious values likely influence some behaviors more than others. Laurent and Kapferer (1985) make the distinction between low and high involvement behaviors where consumers complete low involvement behaviors with little thought (e.g., recycling newspaper in a recycling bin provided by the city) but high involvement behaviors cognitively tax consumers more (e.g., the decision to donate time or money to an environmental charity). Prothero et al. (2011) add that most research on sustainable behaviors thus far looks at low involvement behaviors, and more research needs to examine high involvement behaviors.

Prior research shows that religious values have a greater influence with higher levels of decision involvement (Slama & Tashchian, 1985), and therefore similar effects for sustainable behaviors should exist. The level of effort involved in sustainable behaviors can also fit with the perspective of Kelman's (1958) three functional levels of motivation: (1) compliance, (2) identification, and (3) internalization. At the compliance end, consumers participate in a behavior because they must or because of reward or punishment (e.g., a fine for not recycling). Identification motives occur when a consumer participates in a behavior to develop or to maintain a sense of self (e.g., volunteering with a sustainable organization in order to appear sustainable to a peer group). At the highest level, internalized motives represent a desire to participate in a behavior with no extrinsic encouragement. Internalized motives represent strongly-held beliefs (e.g., religious values) and the greatest, longest-lasting influencers on behavior (Rupp, Williams, & Aguilera, 2011).

Similar findings come about from research on self-determination theory emphasizing the importance of internalized attitudes and desire in behavior change, especially for involved behaviors such as expensive purchases, smoking cessation, healthy consumption, and educational attainment (Deci & Ryan, 2012; Ryan & Deci, 2000). Rather than examining internal and external motives, self-determination theory differentiates between controlled and autonomous motives where controlled motives involve external sanctions and regulations and autonomous motives involve intrinsic motivation (Deci & Ryan, 2012). For sustainability, controlled motives most likely come from culture (e.g., governmental regulations), but autonomous motives should be more likely to emanate from core value systems, such as religion. Because controlled and autonomous motives can intermingle in influencing behavior, research examining both types of motives is important (Ryan & Deci, 2000). In the study herein on religion and sustainable behaviors, the examination of both controlled and autonomous motives involves investigation of religious values (i.e., autonomous motives) and country/cultural differences (i.e., controlled motives). Together, research on levels of involvement, functional motives, and self-determination theory suggest the importance of internalized motives, which can derived from religious values, in influencing long lasting behavioral changes, especially among highly self-defining behaviors. For example, religious values should influence a highly involved decision, such as

buying an energy-efficient car, more than a less involved decision, such as buying organic produce. Therefore:

H3. The effect of religious affiliation and religiosity on sustainable behaviors will show the greatest influence for highly involved sustainable behaviors.

Just as an individual's views on sustainability may embed within in a religious belief system, likewise these views may embed within in a country or culture. At the same time, religion transcends geographic bounds (e.g., Buddhists and Christians are found in both North America and Asia), which in part justifies why the focus is on religion here and not culture. To show that this paper tests the influence of religion on sustainable behaviors and not the influence of culture, data collection occurs in two different places. Places were sought to do this research that would have a sufficient number of adherents of two different world religions but would differ in the dominance of one religion or the other, would differ in Eastern versus Western culture, and would differ in level of economic development, all potential confounds in orientation toward sustainability. The United States and South Korea represent the countries, and Buddhism and Christianity as the religions to meet these criteria. Hereto forth, discussion centers on Buddhism to refer to Eastern religions and Christianity to refer to Western religions.

4. Method

The United States (US) sample was collected via Amazon.com's Mechanical Turk service, which has been shown to be a viable resource for conducting academic research (Buhrmester, Kwang, & Gosling, 2011). The South Korea sample was collected via EZ Survey, a company of Micro Mills Embrain, which is a leading online company in Korea (EZ Survey, 2014) analogous to Mechanical Turk, for a total of 423 respondents. Thirty-five respondents of other belief systems (Hindu, Muslim, Jewish, Confucianist) were removed from the data due to inadequate sample sizes in both the US and South Korea leaving 388 respondents. To ensure survey participants resided in the US or South Korea and not other countries, a restriction was placed on data collection to only include registered users of the US or South Korea. In addition, IP addresses were checked to ensure the accuracy of this restriction. To contrast the results of this study with prior research on sustainable behaviors, several covariates were included: household income, education, marital status, status as primary shopper, employment status, gender, and age.

The survey in South Korea was translated and back translated to ensure survey questions had the same representation in both the US and South Korea. By collecting a cross-cultural sample, the influence of

religion within a culture (thereby greatly reducing cultural bias) as well as the global and more generalizable influence of religion across cultures was examined (thereby reducing the influence of macro factors such as sustainable legislation and cultural attitudes) (Thøgersen, 2010). Prior research has emphasized the importance of cross-cultural research when examining the influence of religion on consumer behavior (Minton & Kahle, 2013). Responses from consumers of three belief systems (Christian, Buddhist, Atheist) were collected within each country. An oversample of 40 Buddhists in the US adjusted for Buddhists' relatively small percentage of Americans. Across both countries, respondents consisted of 44.7% Christian, 16.5% Buddhist, and 38.8% Atheist. Respondents had an average age of 33, 56% were female, 42% had received a college degree, 72% were currently or have been married, and 49% were at least moderately religious.

Dependent variables, similar to ones used in prior research (Corraliza & Berenguer, 2000; Granzin & Olsen, 1991; Prothero et al., 2011; Thøgersen, 2010), assessed the degree to which respondents participate in sustainable behaviors and were measured on nine-point semantic-differential scales ranging from strongly disagree to strongly agree. Factor analysis using principle axis factoring with varimax rotation revealed three factors with eigenvalues greater than one explaining 68.4% of the variance in sustainable behaviors. Separate factor analyses for each country were also conducted to support data equivalence. The factor structure appeared highly similar between the combined dataset and individual country datasets with all alpha levels above .7. Cross loading existed for the Buddhist dataset for two variables, although factor loadings and alpha levels were relatively high; see Table 1 for detailed loadings.

The first factor, Eco-Friendly Purchase and Disposal Behaviors ($\alpha = .768$) describes the general importance of sustainability to a consumer and his or her sustainable purchases and consists of five items: (1) "Sustainability is very important to me," (2) "I regularly recycle newspapers," (3) "I regularly recycle plastic bottles and cans," (4) "When purchasing a large appliance, I seek to purchase an energy-efficient appliance," and (5) "When purchasing a car, I specifically look for an energy-efficient model." The second factor, Indirect Sustainable Behaviors ($\alpha = .79$) describes behaviors not tangible to the consumer but still supporting sustainability initiatives and consists of three items: (1) "I seek to reduce the overall number of purchases I make to help the environment," (2) "I volunteer time to organizations and causes that support sustainability," and (3) "I donate money to organizations and causes that support sustainability." The third factor, Low-Carbon Diet Behaviors ($\alpha = .98$) describes purchase behaviors of products that are eaten and enter the body. Low-carbon diet behaviors consist of two items: (1) "I regularly purchase organic fruits" and (2) "I regularly purchase organic vegetables." The term *low-carbon*

Table 1
Factor loadings of sustainable behaviors.

	Items	Factor 1			Factor 2			Factor 3		
		Combined	US	SK	Combined	US	SK	Combined	US	SK
Factor 1: Eco-friendly purchase and disposal behaviors	1: SustainImport	.526	.605	.363	.201	.158	.403	.161	.393	.312
	2: RecNews	.725	.825	.867	.009	.045	.049	.012	.070	.042
	3: RecCans	.769	.791	.889	.050	-.045	.034	-.052	.154	.122
	4: EfficientAppliance	.571	.749	.693	.088	-.031	.100	.016	.067	.132
	5: EfficientCar	.545	.714	.471	.069	.342	.233	.143	-.067	.170
Factor 2: Indirect sustainable behaviors	6: Reduce	.310	.292	.319	.465	.706	.429	.285	.267	.481
	7: CharityTime	-.008	-.049	.078	.891	.870	.881	.188	.261	.166
	8: CharityMoney	.042	.016	.077	.811	.872	.899	.187	.210	.177
Factor 3: Low-carbon diet behaviors	9: OrgFruit	.133	.132	.103	.275	.322	.196	.926	.915	.940
	10: OrgVeg	.138	.127	.155	.250	.332	.119	.932	.907	.946
	Alpha	.77	.81	.76	.79	.83	.76	.98	.98	.96
	Eigenvalue	3.62	4.12	3.94	1.06	0.95	1.19	2.16	2.21	1.66
	Variance explained	36.2%	41.2%	39.4%	10.6%	9.5%	11.9%	21.6%	22.1%	16.6%

Note: See variable descriptions in text for exact wording and response scales of each factor item. Factor loadings are provided for the combined dataset (both US and South Korea) as well as by individual country to show data equivalence. Bold numbers are significant at the $p < .05$ level.

dieting refers to sustainable eating (Soares, 2009). More specifically, consumers that adhere to a low-carbon diet try to eat foods that would reduce greenhouse gas emissions, which includes eating foods that are not laden with pesticides (i.e., eating organic fruits and vegetables).

Although the first two factors involve behaviors requiring higher levels of involvement (e.g., purchasing an energy-efficient car, reducing purchasing in general), the third factor requires a much lower level of involvement (e.g., purchasing organic fruit), thereby enabling testing of H3 that posits that religious affiliation and religiosity have a greater effect on highly involved behaviors. Of importance to note, the high involvement behaviors represent both socially visible behaviors that are more influenced by social norms (e.g., volunteering, buying an energy-efficient car) and more private behaviors that are less influenced by social norms (e.g., recycling newspaper, reducing overall purchasing, donating money). This variety of behaviors within each involvement level helps to show that the study herein tests involvement differences rather than other confounds (e.g., social visibility or influence of social norms on sustainable behavior).

Religiosity (i.e., strength of religious beliefs) was measured through a specific question, “Please indicate your degree of religious belief,” measured on a five-point scale ranging from anti-religious to very religious. This type of religiosity question is often used in studies measuring religiosity (Cohen, Siegel, & Rozin, 2003; Hossain & Onyango, 2004). Religious affiliation was measured by asking respondents “What belief system do you most closely adhere to?” Respondents were provided with broad classifications from which to choose (Christian, Buddhist, Atheist, Hindu, Muslim, Jew, Confucian) and also given the opportunity to select “other” and thereby to indicate a different belief system. See Table 2 for descriptive statistics.

5. Results

Hierarchical regression examines the influence of religious affiliation (H1a and H1b), religiosity (H2a and H2b), and country on the three sustainable behavior factors of varying levels of involvement (H3). Two dummy codes represent religious affiliation: (1) Buddhists vs. Atheists and (2) Christians vs. Atheists. Four two-way interactions and two three-way interactions among the religion dummy codes, religiosity,

and country were included in the models to test H1a, H1b, H2a and H2b and also show religion's consistent influence on sustainable behaviors across cultures. Covariates of income, education, and marital status also significantly contribute to prediction of sustainable behavior participation where higher income, higher education, and being married all lead to being more sustainable. All other covariates are non-significant multivariate predictors.

The model predicting Eco-Friendly Purchase and Disposal Behaviors including all two- and three-way interactions achieves statistical significance, $F(10, 378) = 1.90, p < .05, R^2 = .05$. The two- and three-way interactions significantly add to the model above and beyond religious affiliation, religiosity, and country, $F\Delta(6, 378) = 2.17, p < .05$. The three-way interaction with the Christian vs. Atheist dummy code achieves significance, $t(378) = -2.05, p < .05$. A spotlight analysis probes this interaction at low religiosity (1 on a scale of 1–5) and high religiosity (5 on a scale of 1–5); see Fig. 1. This further analysis reveals that low religious Christians in South Korea drives the interaction. In other words, consumers who self-identify as Christians in South Korea but do not hold strongly to Christian beliefs participate in fewer eco-friendly purchase and disposal behaviors than similar Christians in the US or Atheists in either country. In addition, the spotlight analysis shows a general trend that highly religious Buddhists participate in more eco-friendly purchase and disposal behaviors than less religious Buddhists or Christians, thereby partially supporting H1a and H2a. While H2a and H2b predict that highly religious Christians would be less or more sustainable than Atheists, respectively, results show that Atheists and highly religious Christians participate at relatively similar levels in their sustainable behavior.

Similar to eco-friendly purchase and disposal behaviors, religious affiliation, religiosity, country, and the interactions among these variables significantly predict Indirect Sustainable Behaviors, $F(10, 378) = 21.65, p < .001, R^2 = .36$. The two- and three-way interactions significantly add to the model, $F\Delta(6, 378) = 16.17, p < .001$. A significant three-way interaction appears among the Buddhist vs. Atheist dummy code, religiosity and country, $t(378) = 2.15, p < .05$. A spotlight analysis further probed this interaction at low religiosity (1 on a scale of 1–5) and high religiosity (5 on a scale of 1–5); see Fig. 2. This analysis reveals that highly religious Buddhists participate in many more indirect sustainable behaviors than less religious Buddhists, again providing partial support for H2a. Mean differences also show that highly religious Buddhists practice more sustainability than all Christians, regardless of level of religiosity, thereby supporting H1a. Also, Buddhists in South Korea participate in slightly fewer indirect sustainable behaviors than Buddhists in the US, although the reverse applies for Atheists (South Korean atheists participate in more indirect sustainable behaviors than US Atheists). This finding again shows that the religion and religiosity differentially influence sustainable behaviors in different cultures.

Finally, for Low-Carbon Diet Behaviors, a model with only religious affiliation, religiosity, and country (no interactions) best fits the data, $F(4, 384) = 8.59, p < .001, R^2 = .08$. Buddhists ($M = 6.1, SD = 2.26$) participate significantly more than Atheists ($M = 4.4, SD = 2.30$) in low-carbon diet behaviors, $t(384) = 2.96, p < .01$. Interestingly, no significant difference exists in low-carbon diet behaviors between Atheists and Christians ($M = 4.5, SD = 2.24$), $t(384) = -.34, p = .735$. Mean differences again show that Buddhists participate in more sustainable behaviors than Christians, thereby partially supporting H1a. Also, highly religious consumers participate significantly more than less religious consumers in low-carbon diet behaviors, $t(384) = 3.00, p < .01$, with no main effect of country, $t(384) = 0.74, p = .457$. The lack of significant interaction effects for low-carbon diet behaviors (behaviors that require relatively low consumer involvement) in contrast to numerous significant interaction effects for eco-friendly purchase and disposal behaviors and indirect sustainable behaviors (behaviors that require relatively high consumer involvement) provides support for H3. In other words, religion and religiosity interact to influence higher involvement

Table 2
Descriptive statistics for sustainable behaviors by religious affiliation and level of religiosity.

Country	Religious affiliation	Religiosity	Eco-friendly purchase & disposal behaviors	Indirect sustainable behaviors	Low-carbon diet behaviors
US	Buddhist (n = 43)	Low	6.0 (1.75)	3.9 (2.44)	5.9 (3.29)
		High	7.1 (1.40)	7.2 (1.23)	7.5 (1.32)
	Christian (n = 73)	Low	7.1 (1.73)	2.7 (1.67)	4.0 (2.50)
		High	7.7 (1.10)	3.2 (1.61)	4.5 (2.53)
	Atheist (n = 46)	NA	6.5 (2.05)	3.6 (2.14)	4.5 (2.67)
South Korea	Buddhist (n = 39)	Low	7.0 (1.03)	3.9 (1.20)	4.2 (1.36)
		High	7.4 (1.29)	4.7 (1.57)	5.0 (2.19)
	Christian (n = 91)	Low	6.2 (1.32)	4.2 (0.94)	4.7 (0.60)
		High	7.2 (1.20)	4.9 (1.61)	5.4 (1.61)
	Atheist (n = 90)	NA	7.0 (1.11)	4.7 (1.50)	4.8 (1.72)
Combined	Buddhist (n = 84)	Low	6.7 (1.32)	3.9 (1.60)	4.7 (2.20)
		High	7.2 (1.36)	6.2 (1.82)	6.5 (2.09)
	Christian (n = 162)	Low	6.9 (1.69)	2.9 (1.67)	4.1 (2.30)
		High	7.3 (1.19)	4.7 (1.70)	5.2 (1.75)
	Atheist (n = 136)	NA	6.8 (1.51)	4.3 (1.81)	4.7 (2.09)

Note: Means (standard deviations). All sustainable factors on a scale from 1 (low participation to 9 (high participation). Buddhists and Christians were divided by level of religiosity using a median split procedure only for the purposes of creating this table (low religiosity = 1–3, high religiosity = 4–5 on scale of 1–5). All analyses retained religiosity as a continuous variable.

Eco-Friendly Purchase and Disposal Behaviors

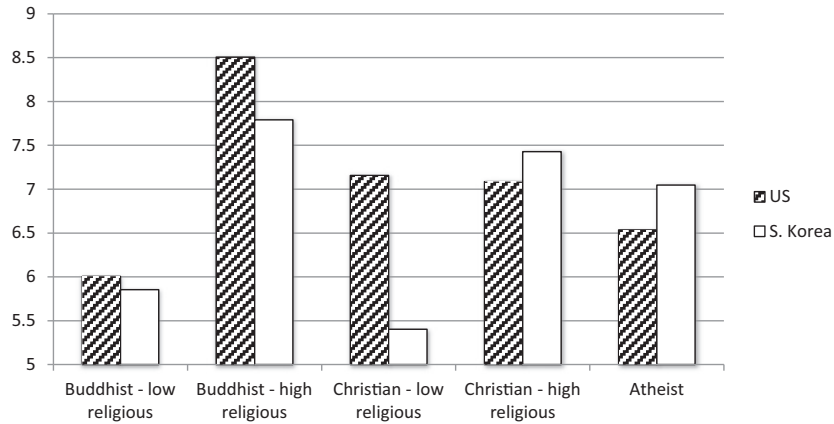


Fig. 1. Spotlight analysis of the three-way interaction among religiosity, religious affiliation, and country for eco-friendly purchase and disposal behaviors. Note: The spotlight analysis was conducted using ± 1 standard deviation from the mean with 84 Buddhists, 162 Christians, and 136 Atheists. Low (high) religious Buddhists and Christians do not represent a group of participants but rather the mean value of sustainable purchase behaviors for a participant who has a level of religiosity at one standard deviation below (above) the mean of religiosity.

sustainable behaviors more greatly than lower involvement sustainable behaviors.

6. Discussion

Expected, both religious affiliation and level of religiosity significantly influence sustainable consumption behaviors. In other words, religion helps explain the gap between values and attitudes/behaviors in the values–attitudes–behavior hierarchy. Buddhists show the most sustainable behavior participation in contrast to Christians and Atheists, providing support for H1a; however, these results only hold for highly religious Buddhists, thereby supporting H2a.

The data do not support competing hypothesis H1b, theorizing that all religious consumers act more sustainably than non-religious consumers. This result suggests that, although religious consumers convey altruistic behaviors in some ways (e.g., helping one's neighbor), these activities do not transfer into sustainable behaviors. Instead, Western religious consumers, in particular, likely follow White's (1967) thesis in believing that God has given them dominance over nature, although this conjecture needs further research to validate. Although these views toward sustainability may be growing more positively in some churches (Wilson, 2012), this view has not yet translated into behavior. The

difference between the study herein showing a negative relation between Western religion and sustainable consumption, and Martin and Bateman's (2014) study showing a positive relationship between Western religion and sustainable consumption, could be a result of sampling differences. The sample here consists of adults of all ages across the US and South Korea, while Martin and Bateman's (2014) sample consists of college students in a Midwest US college and adults over the age of 40 that those students invited to participate.

The religiously-affiliated consumers with low levels of religiosity provide a quite interesting case. These consumers claim Buddhist or Christian affiliation but do not hold strongly to their faith. Results show that these religiously-affiliated consumers participate less in sustainable behaviors than their highly religious counterpart as well as Atheists, thereby supporting H2a. These results make sense given that both Atheists and religious consumers hold to a belief system, albeit quite different beliefs (Minton & Kahle, 2013). Although religious consumers believe in a God or divine being, Atheists believe that a God does not exist. The Atheist's belief that the world will exist far into the future might lead to a greater likelihood of sustainable behaviors as these Atheists desire to preserve the planet for generations to come.

Patterns of behavior across sustainable behaviors (purchase, indirect, and low-carbon diet behaviors) mimic one another. Collapsing

Indirect Sustainable Behaviors

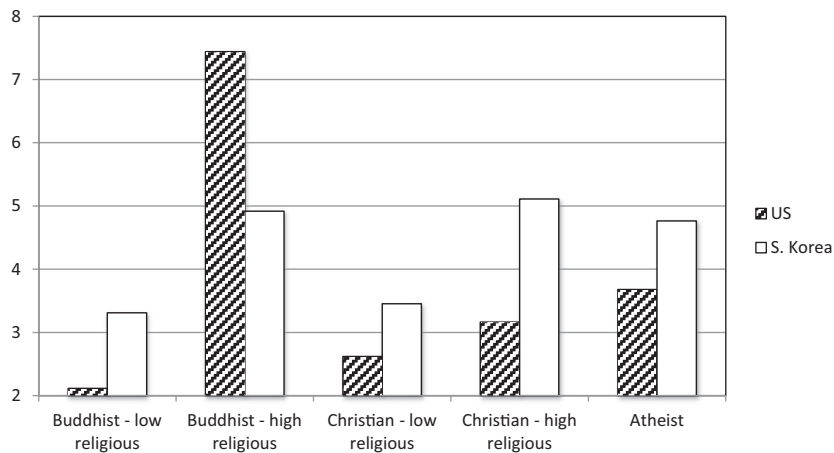


Fig. 2. Spotlight analysis of the three-way interaction among religiosity, religious affiliation, and country for indirect sustainable behaviors. Note: The spotlight analysis was conducted using ± 1 standard deviation from the mean with 84 Buddhists, 162 Christians, and 136 Atheists. Low (high) religious Buddhists and Christians do not represent a group of participants but rather the mean value of indirect sustainable behaviors for a participant who has a level of religiosity at one standard deviation below (above) the mean of religiosity.

across religious affiliation, religiosity, and country, consumers participate in more eco-friendly purchase and disposal behaviors ($M = 7.1$, $SD = 1.45$) than low-carbon diet behaviors ($M = 4.7$, $SD = 2.34$) or indirect sustainable behaviors ($M = 4.0$, $SD = 2.02$). This finding fits with the idea that low-carbon dieting behaviors (e.g., buying organic produce) involve less effort. Indirect sustainable behaviors (e.g., donating time or money to an environmental organization) require more effort and occur more often among consumers at higher levels of motivation (Minton, Lee, Orth, Kim, & Kahle, 2012). More effortful behaviors would require higher levels of motivation to complete (Kelman, 1958), such as internalized motives rather than the more simple external reward or punishment at encouraging highly involved sustainable behaviors. This result describes why the indirect sustainable behaviors model has the greatest percent of variance explained. In other words, highly involved behaviors lead core religious values to have a greater influence on sustainable behaviors.

Also, religiosity only moderates the relation between religious affiliation and sustainable behaviors for the two sets of behaviors that require higher involvement (indirect sustainable behaviors and eco-friendly purchase and disposal behaviors), thereby providing support for H3 that religious values influence sustainable behavior most for high involvement activities. In other words, a consumer needs high commitment to sustainability to volunteer with a sustainable organization, and thus the influence of religion and religiosity (especially among Buddhists who, tenet-wise, should express more concern for the environment) should have the highest levels of participation in such effortful behaviors.

These results support self-determination theory (Deci & Ryan, 2012) in showing that a source of internalized motivation (i.e., autonomous motives) comes from religious values that, in turn, significantly influence sustainable behaviors. Teasing apart religious values and culture remains challenging. Autonomous religious motives drive sustainable behavior rather than controlled motives rooted in culture and governmental regulation because of the examination of religion from two cultures and finding that highly religious Buddhists practice sustainability more than Christians and Atheists in both the US and South Korea. Future research could further explore the application of self-determination theory to motivating sustainable behaviors by examining differences between high internally and high externally religious individuals, such as Allport and Ross (1967) have explored in other contexts.

In general, these effects of religiosity and religious affiliation on sustainable behaviors occur regardless of location, therefore emphasizing that religion transcends geographic bounds. In particular, highly religious Buddhists in the US show more commitment to sustainable behaviors than highly religious Buddhists in South Korea, especially for indirect sustainable behaviors. Yang and Ebaugh (2001) suggest that minority religions (in this case, Buddhists in the US) can be influenced by a majority religion (in this case, Christians in the US), although this view would not fully explain why Buddhists as a minority in the US are more sustainable than Buddhists as a majority in South Korea. The literature on acculturation (i.e., adapting one's home culture to a new culture) describes a condition of *hyper-identification*, whereby consumers of a minority group (e.g., Buddhists in the US) can hold more strongly to their home cultural traditions than consumers in the home majority group (e.g., Buddhists in South Korea) as a means of overcompensating for the cultural differences (Gentry, Jun, & Tansuhaj, 1995; Hirschman et al., 2011). Hyper-identification also relates to the literature on inoculation theory in that consumers hyper-identify with their home culture to prevent persuasion (or inoculation) from a new culture (McGuire, 1964).

Findings from this research have implications for practitioners, change agents, and academics alike, especially ones interested in sustainability. Consumers with higher religious devotion (specifically Buddhists) are more likely to purchase sustainable goods and services as well as to participate in other non-purchase-related sustainable

behaviors. As a result, green advertisements could benefit from adhering to religious standards (e.g., carefully selecting language, emphasizing altruistic behaviors). Especially because religious consumers represent 70% of the world (Hunt & Penwell, 2008), proponents of sustainable behaviors and products should avoid offending this large consumer base.

Although the US sample source of Amazon's Mechanical Turk has been generally viewed as a high quality, demographically-diverse, and cost effective source of data, many limitations to this sample source still exist, including restriction to Internet-savvy consumers and consumers distracted by uncontrollable factors in their personal physical environment (Buhrmester et al., 2011). Limits to this research also include the relatively small sample size of 388 and not measuring political ideology or other predictors of sustainable behaviors (e.g., location, access to sustainable products, altruism, helping behaviors).

Future research would also benefit from expanding beyond the two religious groups explored in this study (Buddhists and Christians). Additionally, given the small sample sizes of consumers in various Christian denominations in South Korea and in Buddhist sects in the US, comparison of sustainable consumption practices among the finer divisions within large belief systems was not possible. Further studies examining how to build upon this research by targeting members of religious groups with pro-social, sustainability-focused messages would also be beneficial. More research would benefit from exploring the gap between consumption and religion and from pulling in theory of sustainable practice from religion research to provide insight into sustainable consumption.

7. Conclusion

Religion significantly relates to performance of sustainable behaviors, thereby helping to explain the gap between values and attitudes/behaviors. Researchers and change agents involved with sustainable products and services, encouraging sustainable behaviors, or developing sustainable policy can benefit from understanding the religious values of consumers. Besides creating targeted messaging toward specific religious groups, findings from this study suggest that change agents involved in the production of sustainable messaging should acknowledge religious values in order not to offend the majority of consumers who practice religion. Also, minority religions (whether Buddhists in the US or Christians in South Korea) show different sustainable behaviors, necessitating that sustainable messaging be targeted differently toward minority groups. An all-encompassing campaign for a sustainable good or a pro-social campaign will show much less effectiveness than specialized campaigns toward a specific belief group in a specific country.

Although religion does not exclusively predict sustainable attitudes and behaviors, an understanding of religion does provide insight into a more holistic view of the sustainable consumer. Views on sustainability exist within larger belief systems, and attempts to influence, activate, or change sustainable behaviors need to respect broader belief systems to maximize effectiveness. By acting upon the findings of this study, change agents and academics have the potential to increase sustainable consumption, promote sustainable behaviors, and develop more effective sustainable policy.

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References

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NY: Prentice-Hall.
- Allport, G.W., & Ross, J.M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, 5(4), 432–443.
- Blogowska, J., & Saroglou, V. (2011). Religious fundamentalism and limited prosociality as a function of the target. *Journal for the Scientific Study of Religion*, 50(1), 44–60.
- Brundtland, G.H. (1987). *World commission on environment and development: Our common future*. Oxford: Oxford University Press.
- Buhrmester, M., Kwang, T., & Gosling, S.D. (2011). Amazon's mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6(1), 3–5.
- Cohen, A.B., Siegel, J.L., & Rozin, P. (2003). Faith versus practice: Different bases for religiosity judgments by Jews and Protestants. *European Journal of Social Psychology*, 33(2), 287–295.
- Corraliza, J.A., & Berenguer, J. (2000). Environmental values, beliefs, and actions. *Environment and Behavior*, 32(6), 832–848.
- Deci, E., & Ryan, R.M. (2012). Self-determination theory. In P.A.M. Van Lange, A.W. Kruglanski, & E.T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 416–437). Thousand Oaks, CA: SAGE.
- Djupe, P.A., & Gwiasda, G.W. (2010). Evangelizing the environment: Decision process effects in political persuasion. *Journal for the Scientific Study of Religion*, 49(1), 73–86.
- Dunlap, T.R. (2004). *Faith in nature: Environmentalism as religious quest*. Seattle, WA: University of Washington Press.
- Eckberg, D.L., & Blocker, T.J. (1989). Varieties of religious involvement and environmental concerns: Testing the Lynn White thesis. *Journal for the Scientific Study of Religion*, 28(4), 509–517.
- Engelland, B.T. (2014). Religion, humanism, marketing, and the consumption of socially responsible products, services, and ideas: Introduction to a special topic section. *Journal of Business Research*, 67(2), 1–4.
- EZ Survey (2014). Retrieved June 30, 2014, from www.ezsurvey.co.kr
- Frihette, J. (2011). Sustainability study: Global warming cools off as top concern. from <http://www.nielsen.com/us/en/press-room/2011/global-warming-cools-off-as-top-concern.html>
- Gentry, J.W., Jun, S., & Tansuhaj, P. (1995). Consumer acculturation processes and cultural conflict: How generalizable is a north american model for marketing globally? *Journal of Business Research*, 32(2), 129–139.
- Granzin, K.L., & Olsen, J.E. (1991). Characterizing participants in activities protecting the environment: A focus on donating, recycling, and conservation behaviors. *Journal of Public Policy & Marketing*, 10(2), 1–27.
- Greeley, A. (1993). Religion and attitudes toward the environment. *Journal for the Scientific Study of Religion*, 32(1), 19–28.
- Hirschman, E.C., Ruvio, A.A., & Touzani, M. (2011). Breaking bread with Abraham's children: Christians, Jews and Muslims' holiday consumption in dominant, minority and diasporic communities. *Journal of the Academy of Marketing Science*, 39(3), 429–448.
- Hossain, F., & Onyango, B. (2004). Product attributes and consumer acceptance of nutritionally enhanced genetically modified foods. *International Journal of Consumer Studies*, 28(3), 255–267.
- Hunt, J., & Penwell, D. (2008). *Amg's handi-reference world religions and cults*. Chattanooga, TN: AMG Publishers.
- James, W. (1902/2004). *The varieties of religious experience*. New York: Touchstone.
- Kahle, L.R. (1996). Social values and consumer behavior: Research from the List of Values. In C. Seligman, J.M. Olson, & M.P. Zanna (Eds.), *The psychology of values: The Ontario symposium, Vol. 8*, Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Kahle, L.R., & Gurel-Atay, E. (2014). *Communicating sustainability for the green economy*. Armonk, NY: ME Sharpe.
- Kahle, L.R., & Xie, G.-X. (2008). Social values in consumer psychology. In C.P. Haugtvedt, P.M. Herr, & F.R. Kardes (Eds.), *Handbook of consumer psychology*. Mahwah, NJ: Lawrence Erlbaum.
- Kalamas, M., Cleveland, M., & Laroche, M. (2014). Pro-environmental behaviors for thee but not for me: Green giants, green gods, and external environmental locus of control. *Journal of Business Research*, 67(2), 12–22.
- Kelman, H.C. (1958). Compliance, identification, and internalization: Three processes of attitude change. *Journal of Conflict Resolution*, 2(1), 51–60.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260.
- Laurent, G., & Kapferer, J.-N. (1985). Measuring consumer involvement profiles. *Journal of Marketing Research*, 22(1), 41–53.
- Martin, W.C., & Bateman, C.R. (2014). Consumer religious commitment's influence on ecocentric attitudes and behavior. *Journal of Business Research*, 67(2), 5–11.
- McDonald, S., Oates, C.J., Young, C.W., & Hwang, K. (2006). Toward sustainable consumption: Researching voluntary simplifiers. *Psychology and Marketing*, 23(6), 515–534.
- McGuire, W.J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology, Vol. 1*. (pp. 192–231). New York, NY: Academic Press, Inc.
- Minton, E.A., & Kahle, L.R. (2013). *Belief systems, religion, and behavioral economics: Marketing in multicultural environments*. New York, NY: Business Expert Press.
- Minton, E.A., Lee, C., Orth, U., Kim, C.-H., & Kahle, L.R. (2012). Sustainable marketing and social media: A cross-country analysis of motives for sustainable behaviors. *Journal of Advertising*, 41(4), 69–84.
- Prothero, A., Dobscha, S., Freund, J., Kilbourne, W.E., Luchs, M.G., Ozanne, L.K., et al. (2011). Sustainable consumption: Opportunities for consumer research and public policy. *Journal of Public Policy & Marketing*, 30(1), 31–38.
- Roccas, S. (2005). Religion and value systems. *Journal of Social Issues*, 61(4), 747–759.
- Rupp, D.E., Williams, C.A., & Aguilera, R.V. (2011). Increasing corporate social responsibility through stakeholder value internalization (and the catalyzing effect of new governance): An application of organizational justice, self-determination, and social influence theories. In M. Schminke (Ed.), *Managerial ethics: Managing the psychology of morality*. New York, NY: Taylor and Francis.
- Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
- Saroglou, V., Delpierre, V., & Dernelle, R. (2004). Values and religiosity: A meta-analysis of studies using Schwartz's model. *Personality and Individual Differences*, 37(4), 721–734.
- Sarre, P. (1995). Towards global environmental values: Lessons from western and eastern experience. *Environmental Values*, 4(2), 115–127.
- Sheth, J.N. (1983). An integrative theory of patronage preference and behavior. In W.R. Darden, & R.F. Lusch (Eds.), *Patronage behavior and retail management* (pp. 9–28). New York: North-Holland.
- Sheth, J.N., Sethia, N.K., & Srinivas, S. (2011). Mindful consumption: A customer-centric approach to sustainability. *Journal of the Academy of Marketing Science*, 39(1), 21–39.
- Slama, M.E., & Tashchian, A. (1985). Selected socioeconomic and demographic characteristics associated with purchasing involvement. *Journal of Marketing*, 49(1), 72–82.
- Soares, C. (2009, March). Sustainable eating – The low-carbon diet. *Scientific American*, 19, 74–76.
- Tanner, C., & Wölfing Kast, S. (2003). Promoting sustainable consumption: Determinants of green purchases by swiss consumers. *Psychology and Marketing*, 20(10), 883–902.
- Thøgersen, J. (2010). Country differences in sustainable consumption: The case of organic food. *Journal of Macromarketing*, 30(2), 171–185.
- Thøgersen, J. (2005). How may consumer policy empower consumers for sustainable lifestyles? *Journal of Consumer Policy*, 28(2), 143–177.
- White, L. (1967). The historical roots of our environmental crisis. *Science*, 155(3767), 1203–1207.
- Wilson, L. (Producer). (2012). Churches embrace the genesis covenant, seek greenfaith certification. *Episcopal News Service*. Retrieved from <http://episcopaldigitalnetwork.com/ens/2012/05/31/churches-embrace-the-genesis-covenant-seek-greenfaith-certification/>.
- Wolkomir, M.J., Futreal, M., Woodrum, E., & Hoban, T. (1997). Denominational subcultures of environmentalism. *Review of Religious Research*, 38(4), 325–343.
- Woodrum, E., & Wolkomir, M.J. (1997). Religious effects on environmentalism. *Sociological Spectrum*, 17(2), 223–234.
- Yang, F., & Ebaugh, H.R. (2001). Religion and ethnicity among new immigrants: The impact of majority/minority status in home and host countries. *Journal for the Scientific Study of Religion*, 40(3), 367–378.