

Understanding Green Purchase: The Influence of Collectivism, Personal Values and Environmental Attitudes, and the Moderating Effect of Perceived Consumer Effectiveness

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Abstract

This study investigates determinants of green buying behavior. Using structural equation modeling, the effects of collectivism, values and attitudes on ecological purchase and their hierarchical relationships are investigated. Furthermore, a moderated multiple regression is applied to test whether the link between attitude and behavior is enhanced by the degree of perceived consumer effectiveness (PCE). The results suggest that collectivism is important in predicting green purchase. The positive influence of collectivism on consumer greenness flows through self-transcendence values. However, PCE fails to moderate the strength of the relationship between environmental attitudes and green purchase behavior. Implications for public policy and marketing communication efforts are discussed.

Keywords: Collectivism, Personal Values, Environmental Attitudes, Perceived Consumer Effectiveness, Green Purchase Behavior

INTRODUCTION

Research indicates that people's concern for the environment has had a definite impact on consumer purchase decisions whereby it

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is suggested to target consumers according to their environmental beliefs. However, increased public concern for environmental issues does not always result in actual purchase. Despite a positive attitude toward the environmental issues, many green products have not reached the level of market success (Aspinall 1993). A recent survey into green consumption patterns in Korea shows that there is a considerable gap between consumers' attitudes and behavior (TNS 2008). This market evidence indicates that a considerable number of consumers who claims to be environmentally conscious still do not purchase a green product and that a majority of green consumers does not purchase it on a regular basis. This incongruence between concern and actual purchasing (Crane 2000; Mintel 1995; Pickett-Baker and Ozaki 2008; Wong, Turner, and Stoneman 1996) has become an obstacle to green marketers, and it provides the trigger for the current study.

The key issue to ameliorate the problem lies primarily in understanding what gets people to buy green products. Thus, psychological-based approaches are often recommended to identify the antecedents of environmentally responsible consumptions. Building on social-conscious, prosocial behavior literature, this study attempted to develop an extended model that can provide the motivations of consumers' ecological consumptions.

Since the 1990s there has been considerable research in various scientific disciplines examining environmentally conscious purchasing behavior. Especially, it is notable that there has been a small but growing literature relating the antecedents of socially conscious behaviors to green purchasing behavior (e.g., Grunert and Juhl 1995; Kim 2006; Kim, Choi, and Rifon 2009; Vermeir and Verbeke 2008). A number of studies have found that individuals' environmental concern (Chan, 1996; Donaton and Fitzgerald, 1992; Kerr, 1990; Ottman, 1993; Schlossberg, 1992; Wall, 1995) and particular beliefs like perceived consumer effectiveness (Ellen, Wiener, and Cobb-Walgren 1991; Kim and Choi 2005; Verhoef 2005) have influenced their purchase behavior. Furthermore, several studies have considered actors' personal values to understand the motivations of environmentally responsible purchase (e.g., Follows and Jobber 2000; Grunert and Juhl 1995; Homer and Kahle 1988; Kim and Choi 2005; Kim, Choi, and Rifon 2009; McCarty and Shrum 2001; Stern, Dietz, and Kalof 1993).

Although a few studies have suggested more general models

of green purchase behavior that have taken these factors into account (Follows and Jobber 2000; Grunert and Juhl 1995; Homer and Kahle 1988; Kim and Choi 2005; Verhoef 2005), there are no empirical studies that have tested conceptual models incorporating the majority of these determining variables. Therefore, the objective of this study is to provide a comprehensive model explaining what goals drive consumer green purchase and how they relate to other determinants. For the purpose, this study constructed and tested the conceptual relationships among the known determinants.

THEORETICAL BACKGROUNDS

The Nature of Environmentally Conscious Behavior

Environmentally responsible buying can be considered as a specific type of socially conscious behavior (Anderson and Cunningham 1972) because the behavior (e.g., buying and consuming green products) reflects a conscious concern for the environmental consequences related to the consumption of particular products or services. Consumers who take into account the ecological consequences (including people and nature) of their private consumptions would be more favorable toward the environment and the use of green products compared to the others who do not care about them. The differences in such ecological attitudes and behavior can be more effectively interpreted by using a person's value system.

It has been proposed that environmental behavior might be different from other types of consumer behaviors in terms of the underlying motivations (McCarty and Shrum 2001; Thøgersen 1996). Generally, the purchase of a particular product or service is driven by an assessment of the benefits that would accrue directly and immediately to the individual or household, relative to the assessment of costs. Unlike most consumer behaviors, however, the benefits that accrue from environmental behavior (e.g. cleaner environment) are future-oriented and unlikely to belong to only the person performing the behavior. Even the behavior often entails additional sacrifices. Therefore, it is likely that basic value orientations consumers hold with respect to interactions with others will influence environmentally conscious behaviors (McCarty and

Shrum 2001).

Fundamental Bases: Value Orientations

The purchase of green products can be importantly determined by environmental concern of the consumer performing the behavior. More deeply, consumer environmental concern appears to be closely related to his/her value systems (Dunlap, Grieneeks, and Rokeach 1983; Granzin and Olsen 1991; Shean and Shei 1995). Thus research on individual environmentalism has paid considerable attentions to individual values, with 'values' being conceived of as "desirable, trans-situational goals, varying in importance, that serve as guiding principles in people's lives" (Schwartz 1996: 2). Consequently, consumer personal values are considered crucial for his/her commitments to the environment.

Given the focal position of values in understanding green consumerism, many scholars have attempted to find particular types of values that are considered to influence pro-environmental beliefs and behaviors. Previous studies focus on individual values, using either the Rokeach Value Survey (e.g., Dunlap, Grieneeks, and Rokeach 1983) or the Schwartz Value Survey (e.g., Grunert and Juhl 1995; Karp 1996; Kim 2006; Kim, Choi, and Rifon 2009; Schultz and Zelezny 1998, 1999; Stern and Dietz 1994; Stern *et al.* 1999; Stern, Dietz, and Kalof 1993; Thøgersen and Grunert-Beckmann 1997). Consequently, particular value types that reflect the extent to which people promote the welfare of others and of nature appear to be important in nurturing pro-environmental behaviors.

On the other hand, some suggest that individualism and collectivism, serving fundamental beliefs about people's relationships and interactions with others, might have influences on individuals' environmental behaviors (e.g., Kim and Choi 2005; McCarty and Shrum 1994, 2001).

Collectivism and Environmentally Conscious Behavior

Originated from Hofstede's work (1980), the notion of collectivism versus individualism illustrates differences in basic beliefs that individuals hold with respect to their interaction with others, the priority of group goals, and the perceived importance of unity with others. In general, people from individualistic cultures are more independent and self-oriented, whereas those from collectivistic cul-

tures tend to be interdependent and group-oriented. Although this value orientation has been investigated mostly at the aggregate level to detect similarities and differences across countries, the current investigation focuses on this belief at the individual level. There is considerable evidence to suggest that a distinction between collectivists and individualists may exist within cultures in the form of an individual difference (Choi 2003; Hui and Triandis 1986; Triandis 1995; Wagner 1995) and that the above outlined defining attributes of individualism and collectivism exist at the individual level (Triandis *et al.* 1995).

Consequently, personal beliefs with regards to the cultural orientation can be examined at the individual, psychological level and these person-level tendencies can predict variances in dependent variables of interest. Collectivistic or individualistic orientations have been found to influence a variety of consumer behavior (e.g., Henry 1976). The differing emphasis on self versus group goals manifested in the cultural syndromes of individualism and collectivism arguably has implications for (the nature of) the consumer commitment to the environment. For example, the characteristics of collectivism which emphasizes the goals of the group and conformity (Hofstede 1980; Triandis 1995) may suggest its positive relationship with environmentally responsible behaviors because more collectivistic people tend to be more concerned with the impact of their action on the society. Also because most of environmentally considered behaviors are recommended or controlled by public sectors, collectivistic people who show more tendencies to obey social norms are more likely to participate in pro-environmental behaviors. In contrast, individualism, characterized as the tendency to focus on the self and stress individual rights over duties (Triandis 1994), may emphasize cost-benefit analyses in determining behavior (Triandis 1994). That is, individualistic people may place greater importance on the relation between their behavior and their own needs (Leung and Bond 1984) than the implications of their behavior for others. This nature implies possibly the negative impact of individualism on environmental behaviors.

Despite some limited evidence for these conjectures, person-level tendencies of collectivism or individualism appear to influence their motivation to engage in environmentally conscious behaviors. According to McCarty and Shrum (1994, 2001), collectivistic persons are more likely to engage in recycling behaviors because they tend to

be more cooperative, be more willing to help others, and emphasize group goals over personal ones than individualistic people. By contrast, people with individualistic tendencies tend to view recycling less important (McCarty and Shrum 2001) than collectivistic people. Dunlap and Van Liere (1984) found that individualistic values are negatively related to beliefs about resource conservation. The influence of collectivism tends to be led to environmental actions through some particular attitudes toward environmental issues (e.g., Kim and Choi 2005; McCarty and Shrum 1994, 2001).

Individual Values and Environmentally Conscious Behavior

Stern, Dietz, and Kalof (1993) proposed a social psychological model that presumes that environmentally relevant behaviors may stem from three distinct value bases: for the welfare of others (altruism), for self (egoism), and for all living things (biospherism). The value-based approach for environmentalism has been further facilitated by Schwartz's universal value theory (1992, 1994) which focuses on value priorities at the individual level.

The value theory by Schwartz and Bilsky (1987, 1990) contends that the focal content aspect of a value is the type of goal or motivational concern that it expresses. They proposed that human values represent three universal requirements of human existence: (a) needs of individuals as biological organisms, (b) requisites of coordinated social interactions, and (c) survival and welfare needs of groups. On the basis of the three needs, Schwartz (1992, 1994) derived a set of 10 value types and organized the value types in four higher order value domains that form two basic bipolar dimensions. Schwartz's value theory has been often used to understand motivations underlying consumers' environmental behaviors and provide a foundation for a particular relationship between values and behaviors. For example, Schwartz's higher order domains, called self-transcendence vs. self-enhancement, have been importantly examined in explaining people's differential commitments to the environment (Karp 1996; Kim, Choi, and Rifon 2009; Milfont, Duckitt, and Cameron 2006; Stern *et al.* 1999) because they are based on the dichotomous tradeoff between promoting the welfare of others (universalism and benevolence) and enhancing their own personal interests (power, achievement, and hedonism).

Using the conflicts between self-transcendence and self-enhancement value domains (Schwartz 1992, 1994), researchers

have investigated why people engage in pro-environmental actions more or less. Literature has consistently indicated that self-transcendence values, representing socio-altruistic motives, are positively related to environmental-friendly attitudes and behaviors, but that self-enhancement values close to egoistic motives are negatively or insignificantly related to them (e.g., Bagozzi and Dabholkar 1994; Follows and Jobber 2000; Grunert and Juhl 1995; Karp 1996; Kim 2006; Kim, Choi, and Rifon 2009; Schultz and Zelezny 1998; Stern, Dietz, and Kalof 1993). Also the impacts of the values on particular behavior tend to be obtained when considering mediating variables.

THE PROPOSED MODEL AND HYPOTHESES

As discussed above, environmental consumerism can be resulted from consumers' value orientations. More specifically, value orientations are believed to guide their concerns for the environment and subsequently affect their ecologically conscious behavior (e.g., Dembkowski and Hanmer-Lloyd 1994; Follows and Jobber 2000; Homer and Kahl 1988; Kim 2006; Kim, Choi, and Rifon 2009). Thus, a hierarchy of values-attitudes-behavior serves as the conceptual framework for this study. In this paper, it is postulated that consumers' collectivistic orientations can serve their values, which will importantly influence environmental attitudes, and

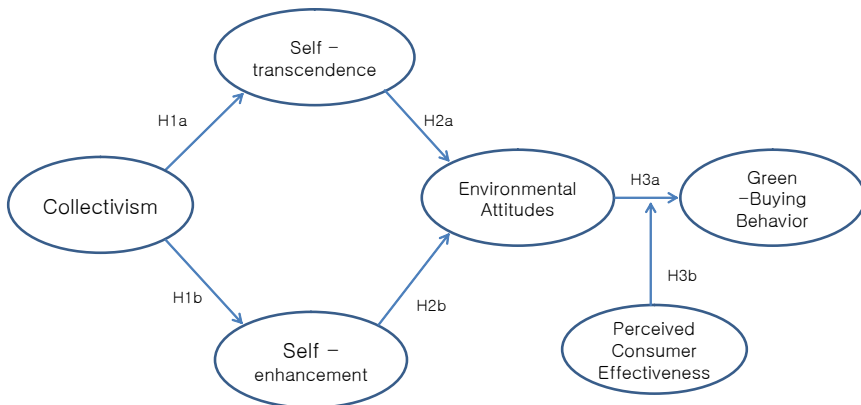


Figure 1. A Proposed Model of Green Purchase

these attitudes will in turn guide green purchasing behavior. In an effort to narrow the gap between environmental attitudes and green buying behavior, PCE is considered as a moderating variable. Figure 1 shows a proposed model depicting how consumers' green buying can be guided by the factors of interest.

Collectivism, Values, and Environmental Concern: Antecedents of Green Purchase

As briefly mentioned above, environmentally concerned consumption can be motivated, in principle, by two different types of consumption goals or motives: the individual objectives of the consumer and long-term collective objectives of society (i.e., the protection of the environment). Thus willingness to buy green products may be a function of an individual's values that correspond to those goals. According to emerging evidence, however, environmentally favorable attitudes and behaviors are driven more strongly by collective or/and self-transcending goals than individual or/and self-enhancing concerns (e.g., Follows and Jobber 2000; Kim 2006; Kim and Choi 2005). Rather, individual and self-enhancing concerns tend to decrease the performance of environmental behaviors because of the opposite relation between self-transcendence and self-enhancement value types.

The Schwartz's 10 value types represent both the individual and collective interests of an individual and also serve as guiding principles when making consumption-related decisions. That is, at the individual level self-enhancement values (e.g., power and achievement) serve individual interests and self-transcendence values (e.g., universalism and benevolence) serve collective interest (Schwartz 1992). Previous research indicates that values, individualism-collectivism, and goal constructs are related in a meaningful fashion (Oishi *et al.* 1998). Therefore, people with strong collectivism will place greater emphasis on self-transcending values because they are strongly concerned with the benefits of the group and focus on group goals. By contrast, people who are more collectivistic tend to de-emphasize individual, self-oriented interests and thus collectivism will be negatively related to self-enhancement values. Therefore, it is predicted that;

H1a: Collectivism will be positively related to self-transcendence

values. That is, people who are more collectivistic will support self-transcendence values more strongly.

H1b: Collectivism will be negatively related to self-enhancement values. That is, people who are more collectivistic will de-emphasize self-enhancement values.

Following a hierarchical framework, this study proposes that a consumer's ecological consumption can be originated from particular values but that the impact of the values will be delivered to green purchase through consumers' attitudes toward the environment. Values, at a more broad and global level, are considered to be distal determinants of behavior working through a number of more proximal determinants, such as the evaluation of perceived consequences of the behavior, attitudes, and beliefs (e.g., Follows and Jobber 2000; Gray 1985; Homer and Kahle 1988; Kim 2006; Kim, Choi, and Rifon 2009; Stern *et al.* 1995; Stern and Oskamp 1987). Values typically influence behavior indirectly through more specific attitudes or beliefs with regards to an object, topic, or idea (Parsons and Shils 1951; Tolman 1951).

Empirically, the effect of collectivism on environmental behavior is more likely to be indirect: McCarty and Shrum (1994, 2001) showed an indirect effect of collectivism on recycling behavior mediated by the attitudes and beliefs related to recycling and Kim and Choi (2005) suggested that collectivism influenced green purchase behaviors through perceived consumer effectiveness (PCE). Similarly, individual values that transcend or enhance selfishness have exerted an indirect impact on pro-environmental behaviors (e.g., Follows and Jobber 2000; Kim 2006; Kim, Choi, and Rifon. 2009) via some domain specific attitudinal concepts. Thus, pro-environmental action is considered as a function of both values and attitudes, with values predicting attitudes.

As discussed above, self-enhancement and self-transcendence values tend to exert inverse influences on consumers' environmental attitudes because of their opposing motivational goals (promoting the welfare of others and of nature vs. enhancing selfish interests) (e.g., Cameron 2006; Karp 1996; Kim, Choi, and Rifon 2009; Milfont, Duckitt, and Cameron 2006; Stern *et al.* 1999). It is thus hypothesized that the self-transcendence and the self-enhancement values will be inversely related to environmental attitudes.

H2a: Self-transcendence values will be positively related to environmental attitudes.

H2b: Self-enhancement values will be negatively related to environmental attitudes.

Environmental Attitudes and Perceived Consumer Effectiveness (PCE)

Environmental attitudes have been assumed to lead to a wide range of environmental behaviors. It seems logical to expect that people need to be concerned about the environment in order to get involved in environmental issues (Maloney and Ward 1973; Oskamp *et al.* 1991; Van Liere and Dunlap 1980; Weigel and Weigel 1978). Results of many studies provided support for this association between environmental attitudes and environmental action (Hines, Hungerford, and Tomera 1986; Karp 1996; Lee and Holden 1999; Milbrath 1984; Vining and Ebreo 1990), despite sometimes weak relationship between them. Conversely, other studies failed to support the association between environmental attitudes and environmental behavior (Gill, Crosby, and Taylor 1986; Oskamp *et al.* 1991; Weigel 1985). This controversial evidence seems to suggest that an environmental attitude, although it is important, is not sufficient for environmental action to occur. For example, even individuals with favorable attitudes may engage in environmental behaviors less frequently because they believe their individual efforts are less effective in solving the problem. People's beliefs in self-efficacy might facilitate participation in actions reflecting their concern about environmental problems. As such, some researchers (Berger and Corbin 1992; Lee and Holden 1999) attempted to capture the gap between attitude and behavior by considering PCE as a moderator between them.

Apart from environmental attitudes, perceived consumer effectiveness (PCE) has received a great deal of attention as an important predictor of environmentally conscious consumer behaviors (Ellen, Wiener, and Cobb-Walgren 1991; Kinnear, Taylor, and Ahmed 1974). PCE, defined as "the evaluation of the self in the context of the issue" (Berger and Corbin 1992: 80-81) differs from an attitude that reflects an evaluation of an issue (Tesser and Shaffer 1990) and predicts importantly environmentally conscious consumer behavior (Balderjahn 1988; Berger and Corbin 1992; Ellen, Wiener, and Cobb-Walgren 1991; Roberts 1996; Roberts and Bacon 1997;

Straughan and Roberts 1999). As a significant component in green consumer confidence, a consumer's PCE level may affect his or her willingness to engage in environmental behaviors. A few studies examined the moderating role of PCE and found that PCE can moderate the strength of the attitude-behavior relationship (Berger and Corbin 1992; Lee and Holden 1999). Consumer attitudes toward environmental issues might not be straightly translated into pro-environmental behaviors; however, the effect of environmental attitudes on green behavior can become greater when consumers believe more strongly that their individual efforts are effective in improving environmental state.

Finally, hypothesis 3 proposes that a high level of environmental attitudes will increase environmentally conscious buying behavior and that the positive effect of environmental attitudes will be increased with high degrees of PCE.

H3a: Environmental attitudes will be positively related to green purchase behavior. That is, people with a higher level of environmental attitudes are more likely to engage in green consumption behavior.

H3b: The effect of environmental attitudes on green purchase behavior will be stronger with higher degrees of PCE.

METHODOLOGY

Participants

Survey data were collected through self-administered questionnaires distributed to undergraduate students enrolled at a major mid-western university in Korea. A total of 261 students participated in the study. The respondents ranged in age from 18 years to 29 years, with an average of 21.6 years. Of the total respondents, 40 percent were male and 60 percent were female. Approximately 89 percent of the participants majored in advertising, public relations, or literatures.

Measures

To test the hypotheses suggested by the conceptual framework,

Table 1. Summary of Measuring Items, Factor Loadings, and Reliabilities

Constructs	Standardized Factor Loading	t-value	<i>a</i>	CR	AVE
<i>Collectivism^a</i>			0.74	0.75	0.51
I maintain harmony in my group [†] .	0.76				
I respect the majority's wish.	0.76	9.22			
I sacrifice self-interest for my group.	0.60	8.18			
<i>Self-transcendence</i>			0.80	0.80	0.51
Honest [†]	0.71				
Helpful	0.75	10.03			
Protecting the environment	0.68	9.40			
Honoring of parents and elders	0.71	9.68			
<i>Self-enhancement</i>			0.70	0.75	0.45
Wealth [†]	0.56				
Authority	0.66	6.78			
Social power	0.78	6.50			
<i>Environmental Attitudes</i>			0.73	0.75	0.50
When humans interfere with nature it often produces disastrous consequences [†] .	0.65				
The balance of nature is very delicate and easily upset.	0.84	8.25			
We are approaching the limit of the number of people the Earth can support.	0.62	7.89			
<i>Perceived consumer effectiveness</i>			0.79	0.81	0.59
I feel capable of helping solve the environmental problems [†] .	0.63				
I can protect the environment by buying products that are friendly to the environment.	0.90	9.77			
I feel I can help solve natural resource problems by conserving water and energy.	0.74	9.59			

Table 1. (Continued)

Constructs	Standardized Factor Loading	t-value	<i>a</i>	CR	AVE
<i>Green Purchase</i> ^a			0.79	0.79	0.50
I have switched products for ecological reasons*.	0.67				
I make a special effort to buy household chemicals such as detergents and cleansing solutions that are environmentally friendly.	0.71	9.02			
I have avoided buying a product because it had potentially harmful environmental effects.	0.69	8.83			
When I have a choice between two equal products, I purchase the one less harmful to other people and the environment.	0.73	9.12			

Notes: ^a Items were measured on a 5-point scale. The other items were assessed on a 7-point scale.

* Reference indicators; All factor loadings are significant ($p < .01$).

measures of each construct were developed using multiple items and Likert-type scales. The multi-item constructs in the questionnaire included collectivism, personal values, environmental attitudes, PCE, and green purchase behavior. In collaboration with an extensive literature review, many items were derived from existing validated scales. Collectivism was measured on a five-point, three-item scale with anchors of (1) “not at all important” to (5) “extremely important” (e.g., Yamaguchi 1990). To measure individual values, seven value items were selected from Schwartz’s Value Survey (1992) measuring self-transcendence (universalism and benevolence) and self-enhancement (achievement, and power). Respondents rated the importance of each value item as “a guiding principle in my life” on a scale from 1 to 7 with the end points “not important at all” and “extremely important.” Validated scales of PCE (e.g., Berger and Corbin 1992; Roberts 1996) and environmental attitudes (e.g., Dunlap and Van Liere 1978) were adapted from previous literature, and they were assessed on a seven-point, three-item, Liker-type scale respectively with endpoints of (1) “strongly disagree” to (7)

“strongly agree.” Green behavior was measured by asking how often respondents engaged in purchasing green products on a five-point scale anchored with (1) “never,” (2) “rarely,” (3) “sometimes,” (4) “often,” and (5) “always.” The specific items for the constructs, their factor loadings, and reliabilities are reported in Table 1.

DATA ANALYSIS AND RESULTS

The empirical analysis was done in the following three stages: a measurement model, a structural equation model containing the main effects, and a model testing the moderator hypothesis. The moderator hypothesis was tested only after the main path effects had been assessed.

Measurement Model

In keeping with the procedure recommended by Anderson and Gerbing (1988), structural equation modeling was used to estimate a measurement model before testing the substantive hypotheses. The measurement model that included latent constructs and indicators was assessed with the fit indexes using AMOS 7. The measurement model showed that all of the indicators significantly loaded on their corresponding factors ($p < .001$, see table 1). The standardized estimates were used to calculate the average variance extracted (AVE) and composite reliability (CR) scores. Established guidelines recommend an AVE of > 0.5 and CR scores > 0.7 (Fornell and Larcker 1981). These guidelines were met with the exception of self-enhancement, which had a somewhat lower variance extracted. These results are summarized in table 1. However, all constructs were considered acceptable for this study. Next, discriminant validity was also examined following Fornell and Larcker’s (1981) criteria. AVEs exceeded the squared correlations between constructs in the model (see table 2), which indicates adequate discriminant validity.

Although the χ^2 for this model was significant (note that a large survey sample size typically leads to the high χ^2 and low p values), the overall the goodness-of-fit indices for this measurement model were acceptable: $\chi^2(109) = 188.13$, $p < .001$; goodness-of-fit index (GFI) = .92; normed fit index (NFI) = 0.86, comparative fit index (CFI)

Table 2. Measurement Model Construct Intercorrelations, and Descriptive Statistics

Variables	1	2	3	4	5	6
1. Collectivism ^a	.51					
2. Self-transcendence	.31** (.10)	.51				
3. Self-enhancement	.13 [†] (.02)	.10 (.01)	.45			
4. Environmental attitudes	.23** (.05)	.35** (.12)	.09 (.01)	.50		
5. PCE	.38** (.14)	.32** (.10)	.11 (.01)	.20** (.04)	.59	
6. Green purchase behavior ^a	.14 [†] (.02)	.19** (.04)	.06 (.00)	.16** (.03)	.14 [†] (.02)	.50
Mean	3.86	5.93	5.19	5.42	5.32	2.70
Standard deviation	.65	.84	.94	.97	1.05	.81

Note: ** P<.01, * P<.05; AVEs for all constructs are on the diagonal; the squares of interconstruct correlations are in parentheses; ^a Items were measured on a 5-point scale. The other items were assessed on a 7-point scale.

= 0.94, incremental fit index (IFI) = 0.94, and root mean square error of approximation (RMSEA) = 0.05. Results indicated that the hypothesized factor structure well fitted the model, showing that the model was acceptable. In summary, the measurement model testing supported the hypothesized multidimensional structure and confirmed that they are distinct constructs. Table 2 presents (squared) correlations between all constructs, AVEs and descriptive statistics for each scale.

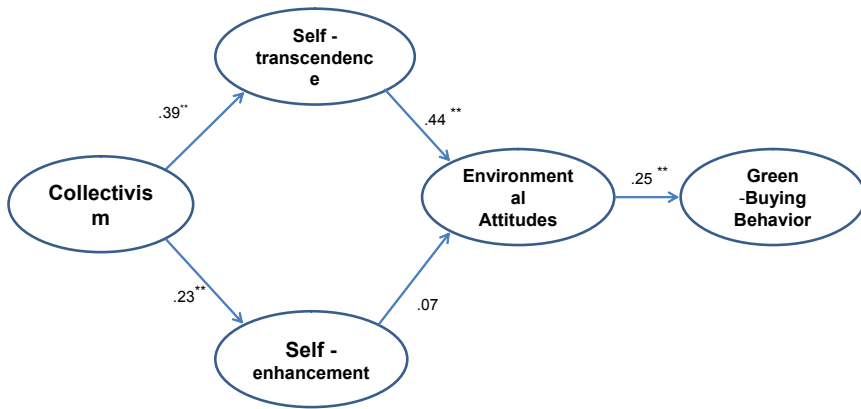
Hypotheses Testing

After the validation of the measurement model, the next step was to test the hypothesized relationships (i.e., main effects) between the constructs depicted in figure 1. A full structural equation model was therefore performed using AMOS 7. Global fit indexes [χ^2 (114) = 195.05 (p < .001); GFI = .92, CFI = .94, NFI = .86, IFI = .94, RMSEA = .05] showed that the model adequately fit the data, thus allowing interpretation of the results. Of the five hypothesized main effects, three were statistically significant and positive (p < .01), supporting hypothesis 1a (collectivism to self-transcendence), hypothesis 2a

Table 3. Standardized Path Coefficients and Result of Hypothesis Testing

Direction of path	Coefficients	t-value	p-value	Conclusion
Collectivism → Self-transcendence	.39	4.61	<.001	H1a confirmed
Collectivism → Self-enhancement	.23	2.68	<.01	H1b confirmed
Self-transcendence → Attitudes	.44	4.96	<.001	H2a confirmed
Self-enhancement → Attitudes	.07	0.94	n.s.	H2b disconfirmed
Attitudes → Green-purchasing	.25	3.12	<.01	H3a confirmed

Note: n.s. = not significant



Note: **P<.01, *P<.05

Figure 2. Structural Equation Model Results

(self-transcendence to environmental concern), and hypothesis 3a (environmental concern to green purchase behavior). Contrary to expectations, however, the relationship between collectivism and self-enhancement values turned to be positively significant ($p < .05$) and the relationship between self-enhancement and environmental concern was insignificant, thereby disconfirming hypotheses 1b and 2b. Table 3 summarizes the structural estimates and the results of hypotheses testing.

The data support the hypotheses that collectivism can be positively related to self-transcendence, which is, in turn, related to consumers' green consciousness. Figure 2 provides the standardized path coefficients of each parameter.

Table 4. Results of Hierarchical Moderated Regression

	Green-buying behavior		
	Model 1a	Model 1b	Model 1c
<i>Main Effect</i>			
Environmental Attitudes	.162**	.140*	.141*
<i>Moderator</i>			
Perceived Consumer Effectiveness		.112	.101
<i>Interaction Terms</i>			
Attitudes x PCE			-.053
R^2	.026	.038	.041
Adjusted R^2	.022	.031	.030
ΔR^2	.026	.012	.003
F	6.965**	5.141**	3.662**

Note: ^a Standardized beta values are reported; **p < .01, *p < .05.

Moderating Effect of PCE

To assess the moderating effect of PCE on the proposed main relationship of environmental attitudes with green-purchasing behavior, a moderated multiple regression analysis was performed (Aiken and West 1991). Results of the moderating effect of PCE on the environmental attitudes-buying behavior relationship are presented in table 4. Consistent with the results from the model, main effect regression showed significant F-value and consequently, allows interpretation. Only environmental attitudes showed a significant and positive beta. Adding the interaction terms of attitudes and PCE to the regression failed to increase explained variance significantly, thus rejecting H3b. As shown in table 4, environmental attitudes had a positive but weakly significant effect on green buying behavior but unlike previous evidence, PCE did not enhance the prediction of green buying behavior at all, rejecting hypothesis 3b.

DISCUSSION

The primary aim of this study is to construct an extended model

explaining the drives and procedures of consumers' ecological consumption. It was hypothesized that (1) collectivism, as defined as individual-level value orientation, may provide a basis for environmentally-related values (i.e., self-transcendence and self-enhancement values); however (2) whereas the self-transcendence values increases environmental attitudes, the self-enhancement values decrease environmental attitudes; (3) the environmental attitudes increase environmentally conscious buying; and (4) the relationship between concern and behavior can be moderated by PCE. To test the hypotheses, data from 261 responses were analyzed. A measurement model was used to establish valid and reliable constructs, a structural equation model (SEM) to test the main effects, and a multiple-moderated regression analysis for the moderator hypotheses.

The findings of this study shed new light on the relation between collectivism and environmentally-related personal values. Previously they have been investigated independently of one another in relation to environmentalism. The positive effects of collectivism are found on two personal values which are believed to influence consumers' environmental consciousness, which supports hypothesis 1a but fails to prove hypothesis 1b as hypothesized. Unexpectedly, collectivism is positively related to self-enhancement values ($\beta = .23$, $p = 0.007$). Because self-enhancement values are considered to serve individual interests, they were assumed to be negatively related to collectivism.

Traditionally, Korean consumers are regarded to be more collectivistic compared to other western consumers. Korean collectivistic cultures might exert extensive, profound influences on the developments of consumers' personal values. Korean people may therefore possess collectivistic tendencies to some degrees regardless of their personal value systems. That is, people may hardly ignore collective goals although they mostly seek self-oriented goals such as personal success and achievement. On the other hand, the items measuring self-enhancement values reflect motivational goal that is "attainment of social status and prestige" as well as dominance over people and resources (Schwartz, 1992: 9). Therefore, it might be possible to obtain a positive relationship between collectivism and self-enhancement because collectivism might be associated with an individual's interest in social status. However, two personal values are related to environmental attitudes in a different way.

This study examined the specific roles of environmentally-related values in guiding consumers' environmental attitudes. By having a strong, positive relationship with environmental attitudes ($\beta = .44$, $p = .000$), self-transcendence appeared to be environmentally important values, which is consistent across cultures. Basically, people who consider importantly the welfare of others and nature become more concerned with environmental issues because the consequences of environmental problems can affect the quality of all people's lives.

On the other hand, significant relationship was not found between self-enhancement values and environmental attitudes ($\beta = .07$, $p = .348$). Conceptually and theoretically, self-enhancement is incompatible with self-transcendence (e.g., Schwartz 1994) because of their opposing motivational goals. Self-enhancement values motivate people to focus on selfish interests than others' welfare. Thus self-enhancement values may not be suitable for collectively-oriented environmental attitudes and actions.

Despite some mixed results regarding the attitude-behavior relationship, the present study shows that environmental attitudes are an important determinant of green purchase behavior. Consumers' ecological consumption is importantly determined by their attitudes toward environmental issues. That is, consumers with high environmental attitudes are more willing to buy ecologically considered products. In addition to the main effect of environmental attitudes on buying behavior, this study further examined whether the relationship between them could be moderated by consumers' PCE. However, the moderating effect by PCE was not found. That is, the influence of environmental attitudes on green purchasing behavior was not influenced by subjects' PCE level. Literature review indicated that PCE, a domain-specific belief that the efforts of an individual can make a difference in the solution to a problem, has not predicted consistently a wide variety of environmental behaviors (e.g., Ellen, Wiener, and Cobb-Walgren 1991; Lee and Holden 1999). A consumer's beliefs that an environmental problem can be solved by a specific action might be important in increasing the performance of the specific action. That is, the role of PCE can be affected by targeted actions. Also, PCE may be affected by respondents' knowledge, direct experience, and the experiences of others (Brown 1979; Thompson 1981).

Finally, this study confirmed the mediating role of attitude in

the link of values and behavior. To support this, the direct paths from three value orientations to green purchase behavior were additionally tested and yielded respectively no significant parameter estimates ($\beta = .07$, $p = .434$ for collectivism; $\beta = .154$, $p = .111$ for self-transcendence; $\beta = .002$, $p = .978$ for self-enhancement).

Theoretical and Practical Implications

Previous work has pointed toward the importance of values in developing environmentally sound behaviors. Applying the hierarchical model of value-attitude-behavior, this study developed propositions regarding the influence of collectivism on two personal values that have been expected to predict environmental attitudes and behavior. In theoretical aspects, findings of this study highlight the importance of intervening variables between values and behavior. That is, fundamental values that individuals hold at an abstract level can motivate and drive behavior, but attitudes towards issues closely related to the behavior may be required to intervene between the abstract values and the concrete behavior. As a result, values provide the basis for the development of individual attitudes which lead to specific decision-making behavior (Homer and Kahle 1988). Also, the influence of collectivism in establishing individual values was empirically supported. Particularly, Schwartz's self-transcendence values represent collective interests and serve as guiding principles when making a purchase decision for green products. The extent of consumers' environmental efforts will likely depend on their value orientations.

These findings have also certain practical implications for marketing and public policy. The implications are mainly related to segmentation and targeting efforts and in particular to what types of messages are constructed to persuade people to buy green. In terms of segmentation, the results of this study suggest that target segments for green products may be those who are motivated strongly by self-transcending goals. Likewise, advertising and other marketing communication efforts need to portray the use of green products as a way which can contribute to the well-beings of all.

Because the path to green purchase behavior can vary as a function of personal values, the appeals of persuasive communication should also vary according to the values of the target. Communications aimed at promoting people's environmental attitudes and buy-

ing habits may try to match the focus of the expected benefits to the predominant values of the target like altruism. For example, advertising appeals that stress group benefits as the consequences of individuals' ecological buying can be better accepted by Korean consumers. That is, marketers and policy makers can be recommended to use communication message developing the link between consumers' green choices and the betterment of community life. Other research provides more support for this notion: Aaker and Williams (1998) found that the persuasiveness of types of emotional appeals (e.g., ego-focused vs. other-focused) used in persuasive communications varies as a function of the value orientation of the message recipients.

In particular, this study suggests that the concern about environmental issues, as a critical mediator of green purchase behavior, can be effectively addressed in a persuasive communication - but only when targeting people who are strong in self-transcendence. Individuals who endorse altruistic, self-transcendence values tend to engage in green buying with the purpose of enhancing all people's welfare through their favorable attitudes toward environmental issues. However, for those high in self-enhancement, an environmental issue may not be their main concern. According to this research, appeals for green purchases may have little effect for people who are high in egoism because they are indifferent to environmental issues. Therefore communication planners should first concentrate on increasing their concerns about the environment with creative messages before persuading them to try green products. For example, to increase self-focused consumers' involvement with environmental issues communication message can emphasize the relevancy of the sound environment to the achievement of personally oriented goals.

Also, this study shows that even consumers high in self-enhancement tend to respect the majority's decision. This implies that most of Korean consumers can be effectively affected by appeals describing environmental efforts as collective agreements. Thus communicators can use different situations and contexts to influence self-focused and others-oriented buyers but both cases should utilize collectivistic stimulus. For example, communication campaigns can expect some effects from an approach that causes people, regardless of personal value orientations, to shift their focus from the individual benefits of the behavior to collective ones. Communicators can activate interdependent self-view temporarily by exposing audi-

ences to messages priming collective obligation in an environmental crisis (e.g., Aaker and Lee 2001; Gardner, Gabriel, and Lee 1999) and in turn, alter their attitudes toward green behaviors. According to Aaker and Lee (2001), individuals with a more accessible interdependent self-view tend to be oriented toward a prevention goal (i.e., regulating behaviors to avoid negative outcomes). Thus, when one's interdependent self is more activated, greater persuasion effects for negative (prevention) relative to positive (promotion) framed information are likely to be observed (Aaker and Lee 2001). That is, prevention benefits (e.g., reducing pollutions or avoiding climate changes) can be more persuasive.

Limitations of the Study and Future Suggestions

There are a few limitations to be considered when making conclusions from the present study. The first limitation pertains to population and sample issues. As with any other studies using a student sample, the findings of this study might not represent consumers at large. Also the use of a student sample may limit the variety of response when measuring variables because students are less various in their characteristics. Thus future research using a sample representing population is recommended, and it is expected to detect more accurately the causality between main constructs. A second limitation pertains to the narrow range of the study. The primary interest of this study was in understanding how individual value systems relate to ecological consumption, with reference to the value-attitude-behavior structure. Because of this interest, the study focused on a limited set of antecedents to the behaviors. Future studies can consider a comprehensive and unified framework suggested by Bagozzi (2006) to provide a deeper understanding regarding the variables and processes related to consumers' green behavior. Finally, this study focused on green purchasing only. Therefore, to advance the understanding of how values relate to green behavior, future research needs to apply the proposed model to other types of environmental behaviors.

REFERENCES

Aaker, J. and A. Y. Lee (2001), "I" Seek Pleasures and "We" Avoid pains:

- The Role of Self-Regulatory Goals in Information Processing and Persuasion," *Journal of Consumer Research*, 28, 33-49.
- Aaker, J. and P. Williams (1998), "Empathy versus Pride: The Influence of Emotional Appeals across Cultures," *Journal of Consumer Research*, 25 (December), 241-261.
- Aiken, M. and S. G. West (1991), *Multiple Regression: Testing and Interpreting Interactions*, Newbury Park, CA: Sage.
- Anderson, W. T., Jr. and W. H. Cunningham (1972), "The Socially Conscious Consumer," *Journal of Marketing*, 36, 23-31.
- Anderson, J. C. and D. W. Gerbing (1988), "Structural Equation Modeling In Practice: A Revisited and Recommended Two-Step Approach," *Psychological Bulletin*, 103 (May), 411-423.
- Aspinall, D. (1993), "Green Cleaning," *Home Economics and Technology*, November.
- Bagozzi, R. P. (2006), "Explaining Consumer Behavior and Consumer Action: From Fragmentation to Unity," *Seoul Journal of Business*, 12(2), 111-143.
- Bagozzi, R. P. and P. A. Dabholkar (1994), "Consumer Recycling Goals and Their Effect on Decisions to Recycle: A Means-End Chain Analysis," *Psychology & Marketing*, 11 (July/August), 313-340.
- Balderjahn, I. (1988), "Personality Variables and Environmental Attitudes as Predictors of Ecologically Responsible Consumption Patterns," *Journal of Business Research*, 17 (August), 51-56.
- Berger, I. E. and R. M. Corbin (1992), "Perceived Consumer Effectiveness and Faith in Others as Moderators of Environmentally Responsible Behaviors," *Journal of Public Policy & Marketing*, 11 (Fall), 79-89.
- Brown, I. Jr. (1979), "Learned Helplessness through Modeling: Self-efficacy and Social Comparison Processes," in *Choice and Perceived Control*, L. C. Perlmutter and R. A. Monty, Eds., Hillandale, NJ: Lawrence Erlbaum Associates.
- Chan, T. S. (1996), "Concerns for Environmental Issues and Consumer Purchase Preferences: A Two-Country study," *Journal of International Consumer Marketing*, 9, 43-55.
- Choi, J. (2003), "Outcome Favorability, Procedures, and Individualism-Collectivism in Procedural Justice Perceptions," *Seoul Journal of Business*, 9(1), 1-26.
- Crane, A. (2000), "Facing the Backlash: Green Marketing and Strategic Reorientation in the 1990s," *Journal of Strategic Marketing*, 8(3), 277-296.
- Dembkowski, S. and S. Hanmer-Lloyd (1994), "The Environmental Value-Attitude-System Model: A Framework to Guide The Understanding of Environmentally-Conscious Consumer Behavior," *Journal of Marketing Management*, 10 (7), 593-603.
- Donaton, S. and K. Fitzgerald (1992), "Polls Show Ecological Concerns is

- Strong," *Advertising Age*, 63 (June 15), 49.
- Dunlap, R. E., J. K. Grieneeks, and M. Rokeach (1983), "Human Values and Pro-environmental Behavior," in *Energy and Material Resources: Attitudes, Values, and Public Policy*, W. D. Conn, ed., Boulder, CO: Westview.
- Dunlap, R. E. and K. D. Van Liere (1978), "The New Environmental Paradigm," *Journal of Environmental Education*, 9 (4), 10-19.
- _____ (1984), "Commitment to the Dominant Social Program and Concern for Environmental Quality," *Social Science Quarterly*, 65 (December), 1013-1028.
- Ellen, P. S., J. L. Wiener, and C. Cobb-Walgren (1991), "The Role of Perceived Consumer Effectiveness in Motivating Environmentally Conscious Behaviors," *Journal of Public Policy & Marketing*, 10 (Fall), 102-117.
- Follows, S. B. and D. Jobber (2000), "Environmentally Responsible Purchase Behavior: A Test of a Consumer," *European Journal of Marketing*, 34 (5/6), 723-746.
- Fornell, C. and D. Larcker (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, 18, 39-50.
- Gardner, W. L., S. Gabriel, and A. Y. Lee (1999), "'I' Value Freedom, But 'We' Value Relationships: Self-Construal Priming Mirrors Cultural Differences in Judgment," *Psychological Science*, 10, 321-326.
- Gill, J. D., L. A. Crosby, and J. R. Taylor (1986), "Ecological Concern, Attitudes, and Social Norms in Voting Behavior," *Public Opinion Quarterly*, 50, 537-554.
- Granzin, K. L. and J. E. Olsen (1991), "Characterizing Participants in Activities Protecting the Environment: A Focus on Donating, Recycling and Conservation Behaviors," *Journal of Public Policy & Marketing*, 10, 1-27.
- Gray, D. B. (1985), *Ecological Beliefs and Behaviors: Assessment and Change*, Westport, CT: Greenwood Press.
- Grunert, S. C. and H. J. Juhl (1995), "Values, Environmental Attitudes, and Buying of Organic Foods," *Journal of Economic Psychology*, 16, 39-62.
- Hines, J. M., H. R. Hungerford, and A. N. Tomera (1987), "Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis," *Journal of Environmental Education*, 18, 1-8.
- Henry, W. A. (1976), "Cultural Values Do Correlate with Consumer Behavior," *Journal of Marketing Research*, 13 (May), 121-127
- Hofstede, G. (1980), *Culture's Consequences: International Differences in Work-Related Value*, Beverly Hills, CA: Sage.
- Homer, P. and L. R. Kahle (1988), "A Structural Equation Test of the Values-Attitude-Behavior Hierarchy," *Journal of Personality and Social*

- Psychology*, 54 (April), 638-646.
- Hui, C. H. and H. C. Triandis (1986), "Individualism-Collectivism: A Study of Cross-Cultural Researchers," *Journal of Cross-Cultural Psychology*, 17, 225-248.
- Karp, D. G. (1996), "Values and Their Effect on Pro-environmental Behavior," *Environment and Behavior*, 28 (January), 111-133.
- Kerr, K. (1990), "Thinking Green is No Longer a Hippie Dream," *AdWeek*, 31, 18-19.
- Kim, Y. and S. M. Choi (2005), "Antecedents of Green Purchase Behavior: An Examination of Collectivism, Environmental Concern, and PCE," *Advances in Consumer Research*, 32, 592-599.
- Kim, Y., S. M. Choi, and N. Rifon (2009), "A Cross-Cultural Study of Value Structure and Environmental Consumerism: The Case of Korean and United States Consumers," *Korean Journal of Marketing*, 10(4), 35-64.
- Kinney, T. C., J. R. Taylor, and S. A. Ahmed (1974), "Ecologically Concerned Consumers: Who Are They?" *Journal of Marketing*, 38, 20-24.
- Lee, J. A. and S. J. S. Holden (1999), "Understanding the Determinants of Environmentally Conscious Behavior," *Psychology & Marketing*, 16 (August), 373-392.
- Leung, K. and M. H. Bond (1984), "The Impact of Cultural Collectivism on Reward Allocation," *Journal of Personality and Social Psychology*, 47 (October), 793-804.
- McCarty, J. A. and L. J. Shrum (1994), "The Recycling of Solid Wastes: Personal and Cultural Values and Attitudes about Recycling as Antecedents of Recycling Behavior," *Journal of Business Research*, 30 (May), 53-62.
- _____ (2001), "The Influence of Individualism, Collectivism, and Locus of Control on Environmental Beliefs and Behavior," *Journal of Public Policy & Marketing*, 20 (Spring), 93-104.
- Milbrath, L. W. (1984), *Environmentalists: Vanguard for A New Society*, Albany: State University of New York Press.
- Milfont, T. L., J. Duckitt, and L. D. Cameron (2006), "A Cross-Cultural Study of Environmental Motives Concerns and Their Implications for Proenvironmental Behavior," *Environment and Behavior*, 38(6), 745-767.
- Mintel (1995), *The Green Consumer Report*, London.
- Oishi, S., U. Schimmack, E. Diener, and E. M. Suh (1998), "The Measurement of Values and Individualism-Collectivism," *Personality and Social Psychology Bulletin*, 11, 1177-1189.
- Oskamp, S., M. J. Harrington, T. C. Edwards, D. L. Sherwood, S. M. Okuda, and D. C. Swanson (1991), "Factors Influencing Household Recycling Behavior," *Environment and Behavior*, 23, 494-519.

- Ottman, J. (1993), "Industry's Response to Green Consumerism," *Journal of Business Strategy*, 13, 3-7.
- Parsons, T. and E. A. Shils (1951), *Toward a General Theory of Action*, Cambridge: Harvard University Press.
- Pickett-Baker, J. and R. Ozaki (2008), "Pro-environmental Products: Marketing Influence on Consumer on Consumer Purchase Decision," *Journal of Consumer Marketing*, 25 (5), 281-293.
- Roberts, J. A. (1996), "Green Consumers in the 1990s: Profile and Implications for Advertising," *Journal of Business Research*, 36 (6), 217-325.
- Roberts, J. A. and D. R. Bacon (1997), "Exploring the Subtle Relationships between Environmental Concern and Ecologically Conscious Behavior," *Journal of Business Research*, 40 (1), 79-89.
- Schlossberg, Howard (1992), "Kids Teach Parents How to Change Their Buying Habits," *Marketing News*, 26 (March 2), 8.
- Schultz, P. W. and L. C. Zelezny (1998), "Values and Proenvironmental Behavior: A Five-Country Survey," *Journal of Cross-Cultural Psychology*, 29 (July), 540-558.
- _____ (1999), "Value as Predictors of Environmental Attitudes: Evidence for Consistency across 14 Countries," *Journal of Environmental Psychology*, 19, 255-265.
- Schwartz, S. H. (1990), "Individualism-Collectivism: Critique and Proposed Refinements," *Journal of Cross-Cultural Psychology*, 21, 139-157.
- _____ (1992), "Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries," *Advances in Experimental Social Psychology*, 25, 1-65.
- _____ (1994), "Are There Universal Aspects in the Structure and Contents of Human Values?" *Journal of Social Issue*, 50, 19-45.
- _____ (1996), "Value Priorities and Behavior: Applying a Theory of Integrated Value Systems," in *The Psychology of Values: The Ontario Symposium*, C. Seligman, J. M. Olson, and M. P. Zanna, eds., Mahwah, NJ: Lawrence Erlbaum, 8, 1-24.
- Schwartz, S. H. and W. Bilsky (1987), "Toward A Universal Psychological Structure of Human Values," *Journal of Personality and Social Psychology*, 53 (3), 550-562.
- _____ (1990), "Toward A Theory of the Universal Content and Structure of Values: Extensions and Cross-Cultural Replications," *Journal of Personality and Social Psychology*, 58 (5), 878-891.
- Shean, G. and T. Shei (1995), "The Values of Student Environmentalists," *The Journal of Psychology*, 129 (5), 559-564.
- Stern, P. C. and S. Oskamp (1987), "Managing Scarce Environmental Resources," in *Handbook of Environmental Psychology*, D. Stokols and I. Altman, eds., New York, NY: John Wiley & Sons, 2, 1043-1088.

- Stern, P. C. and T. Dietz (1994), "The Value Basis of Environmental Concern," *Journal of Social Issues*, 50 (3), 65-84.
- Stern, P. C., T. Dietz, and L. Kalof (1993), "Values Orientations, Gender, and Environmental Concern," *Environment and Behavior*, 25 (May), 322-348.
- Stern, P. C., T. Dietz, L. Kalof, and Gregory A. Guagnano (1995), "Values, Beliefs, and Proenvironmental Action: Attitude Formation toward Emergent Attitude Objects," *Journal of Applied Social Psychology*, 25, 1611-1636.
- Stern, P. C., T. Dietz, T. Abel, G. A. Guagnano, and L. Kalof (1999), "A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism," *Human Ecology Review*, 6, 81-97.
- Straughan, R. D. and J. A. Roberts (1999), "Environmental Segmentation Alternatives: A Look at Green Consumer Behavior in the New Millennium," *Journal of Consumer Marketing*, 16 (6), 558-575.
- Tesser, A. and D. R. Shaffer (1990), "Attitudes and Attitude Change," *Annual Review of Psychology*, 41, 479-523.
- Thøgerson, J. (1996), "Recycling and Morality: A Critical Review of the Literature," *Environment and Behavior*, 28 (July), 536-558.
- Thøgerson, J. and S. C. Grunert-Beckmann (1997), "Values and Attitude Formation towards Emerging Attitude Objects: From Recycling to General Waste Minimizing Behavior," *Advances in Consumer Research*, 24, 182-189.
- Thompson, S. C. (1981), "Will It Hurt Less If I Can Control It? A Complex Answer to A Simple Question," *Psychological Bulletin*, 90, 89-101.
- TNS (2008), "Our Green World: An International Survey Covering 17 Countries into How Green We Really Are," Research Report, December. [www document]. URL <http://www.tnsglobal.com>.
- Tolman, E. C. (1951), "A Psychological Model," in *Toward a General Theory of Action*, T. Parsons and E. A. Shils, eds., Cambridge, MA: Harvard University Press.
- Triandis, H. C. (1994), "Theoretical and Methodological Approaches to the Study of Collectivism and Individualism," in *Individualism and Collectivism: Theory, Method, and Applications*, U. Kim et al., eds., Thousand Oaks, CA: Sage, 41-51.
- _____ (1995), *Individualism and Collectivism*, Boulder, CO: Westview Press.
- Triandis, H. C., D. K. S. Chan, D. P. S. Bhawuk, S. Iwao, and J. B. P. Sinha (1995), "Multimethod Probes of Allocentrism and Idiocentrism," *International Journal of Psychology*, 30, 461-480.
- Van Liere, K. D. and R. E. Dunlap (1980), "The Social Bases of Environmental Concern: A Review of Hypotheses, Explanations, and

- Empirical Evidence," *Public Opinion Quarterly*, 44, 181-197.
- Vining, J. and A. Ebreo (1990), "What Makes a Recycler?: A Comparison of Recyclers and Nonrecyclers," *Environment and Behavior*, 22 (January), 55-73.
- Verhoef, P. C. (2005), "Explaining Purchases of Organic Meat by Dutch Consumers," *European Review of Agricultural Economics*, 32 (2), 245-267.
- Vermeir, I. and W. Verbeke (2008), "Sustainable Food Consumption among Young Adults in Belgium: Theory of Planned Behavior and Role of Confidence and Values," *Ecological Economics*, 64, 542-553.
- Wagner, J. A. III (1995), "Studies of Individualism-Collectivism: Effects on Cooperation in Groups," *Academy of Management Journal*, 38, 152-172.
- Wall, G. (1995), "Barriers to Individual Environmental Action: The Influence of Attitudes and Social Experiences," *The Canadian Review of Sociology and Anthropology*, 32, 465-490.
- Wiegel, R. H. (1985), "Ecological Attitudes and Actions," in *Ecological Beliefs and Behaviors: Assessment and Change*, D. B. Gray, ed., Westport, CT: Greenwood.
- Wiegel, R. H. and J. Wiegel (1978), "Environmental Concern: The Development of A Measure," *Environment and Behavior*, 10(1), 3-5.
- Williams, R. M., Jr. (1979), "Change and Stability in Values and Value Perspectives: A Sociological Perspectives," in *Understanding Human Values: Individual and Societal*, M. Rokeach, ed., New York: Free Press.
- Wong, V., W. Turner, and P. Stoneman (1996), "Marketing Strategies and Market Prospects for Environmentally-Friendly Consumer Products," *British Journal of Management*, 7, 263-281.
- Yamagichi, T. (1994), "Social Dilemmas," in *Sociological Perspectives on Social Psychology*, K. S. Cook, G. A. Fine, and J. House, eds., Boston: Allyn & Bacon, 311-334.

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