The Influence of Individualism, Collectivism, and Locus of Control on Environmental Beliefs and Behavior

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This study investigates the influence of value orientations measured at the individual level (individualism, collectivism, and locus of control) and of economic status on environmental beliefs and behavior. Structural equation modeling reveals that the preferred model is one in which the value orientations and economic status influence beliefs about recycling, which in turn influence recycling behavior, but the influence of the value orientations and economic status differs as a function of the type of environmental belief. Individualism and economic status are related to beliefs about the inconvenience of recycling; collectivism and locus of control are related to beliefs about the importance of recycling. Moreover, specific beliefs about the importance of recycling have both a direct influence on recycling behavior and an effect that is mediated by beliefs about the inconvenience of recycling. The authors present the implications of the study for public policy and marketing communication efforts.

As the environment has become an increasingly visible social and political concern in the last 20 years, issues in the environmental domain have begun to attract the attention of researchers in marketing and the social sciences (e.g., Alwitt and Pitts 1996; Berger 1997; Berger and Corbin 1992; Pieters et al. 1998; Shrum, McCarty, and Lowrey 1995). Examples of such issues include understanding consumer motivations underlying the purchase of environmentally friendly products and services (e.g., Bagozzi and Dabholkar 1994), explicating the relation between general psychological constructs and environmental behavior (e.g., values, attitudes, beliefs; Berger and Corbin 1992; Biswas et al. 2000; Dietz, Stern, and Guagnano 1998), and pinpointing the antecedents of postpurchase/postconsumption behavior (e.g., household waste disposal, product reuse; Alwitt and Pitts 1996; Shrum, McCarty, and Lowrey 1995).

For the most part, understanding and predicting proenvironmental behavior has proved to be remarkably difficult. One of the constant refrains in both the academic and popular press is that even though it seems as if nearly everyone has positive attitudes and beliefs regarding the environment, proenvironmental behavior (purchase, disposal) has not been correspondingly ubiquitous. Public opinion polls consistently find that a vast majority of people say that their purchases are influenced by environmental concerns (Chase and Smith 1992; Dagnoli 1991), indicate that they would pay more for environmentally friendly products (Dagnoli 1991; Hume and Strnad 1989), and classify themselves as environmentalists (Gutfeld 1991). Yet few "green" products have been particularly successful (Reitman 1992), and increases in recycling over the years have not been impressive (Porter, Leeming, and Dwyer 1995).

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We propose that there are at least two interrelated reasons it has been so difficult to understand and predict proenvironmental behavior. First, the nature of the behavior and the motivations underlying it are quite different from most types of consumer purchase behavior. Most models of purchase intention assume that the consumer has some level of self-interest and that the purchase of a particular product or service is driven by an assessment of the benefits that would accrue directly to the individual or household, relative to the assessment of costs. Unlike most consumer behaviors, however, the direct, extrinsic benefits that accrue from proenvironmental behaviors (e.g., a noticeably better environment) are at best long-term for the individual and may in fact never be realized.[1] The costs, conversely, tend to be realized immediately. Products that are made from recycled material may be more expensive or perceived as inferior, and recycling requires certain behaviors that may be perceived as inconvenient. Therefore, although there are benefits and costs associated with proenvironmental behaviors, the nature of the benefits and the assessment of them relative to the costs is likely a different matter than in the case of most consumption activities (Thogersen 1996).

Second, because the nature of the benefits of proenvironmental behaviors and their assessment relative to their costs may be different from those of other consumer behaviors, the antecedents of proenvironmental beliefs may differ from the antecedents commonly investigated by consumer researchers. We propose that fundamental beliefs people hold that pertain to their interaction with the world around them and with other people influence the formation of their beliefs about environmental issues and their propensity to

[1]Monetary incentives for engaging in recycling behaviors would be direct and immediate benefits to individuals for engaging in the behavior. Biswas and colleagues (2000) note, however, that the use of economic incentives, such as high redemption values and coupons, has decreased in recent years because of the reduction in value of many recyclable materials. Thus, direct and immediate monetary incentives to individuals for engaging in recycling behavior have declined as recycling programs have developed.

engage in proenvironmental behaviors. In particular, because the benefits that accrue from proenvironmental behaviors are future oriented and unlikely to benefit directly the person performing the behavior, it is likely that fundamental concepts that relate to people's beliefs about their ability to influence future outcomes and their desire to provide benefits for others may influence proenvironmental beliefs and behaviors.

In this article, we develop and test a model of the relationship between such fundamental beliefs (or value orientations) and proenvironmental beliefs and behaviors. We propose that three basic values that relate to people's interaction with the world and with others will influence proenvironmental behavior. Two of these constructs, individualism and collectivism, relate to basic beliefs about humans' relationships and interactions with other humans. The third construct, locus of control, is a basic belief about humans' relationships and interactions with their environment. We test this model for a particular proenvironmental behavior (recycling) and beliefs related to this behavior. Because other factors (e.g., socioeconomic variables) have been shown to relate to recycling (Berger 1997), we test the fundamental beliefs of interest in conjunction with the variable of economic status.

Background

Fundamental Beliefs: Value Orientations

Individualism, collectivism, and locus of control are basic beliefs that people hold with respect to their interaction with others and the world around them. In that sense, these basic beliefs can be referred to as value orientations (Kluckhohn 1951), which have been described as fundamental beliefs that cultural groups or individuals have that assist in the adaptation to their physical and social environment. Although these value orientations have often been investigated by social scientists at the cultural level (e.g., differences in individualism across countries), the current investigation focuses on these beliefs at the individual, psychological level.

Individualism and Collectivism

Individualism and collectivism have been identified as orientations that can be taken with respect to a person's or group's relationship to others. Individualism can be broadly characterized as the tendency to value the individual over the group and give priority to personal goals over group goals (Triandis 1989). Individualism stresses individual initiative, a greater focus on the self, and emotional independence (Hofstede 1980). It also emphasizes self-reliance and freedom of choice (Bellah et al. 1985), stresses individual rights over duties, and puts emphasis on cost–benefit analyses in determining behavior (Triandis 1994). In contrast, collectivism emphasizes the goals of the group over personal goals, stresses conformity and in-group harmony, and defines the self in relation to the group (Triandis 1995). Collectivism emphasizes sharing, duties, and obligations (Hofstede 1980).

When studied at the cultural level, individualism and collectivism are considered to represent opposite ends of one continuum, and cultures are often described as being either individualistic or collectivistic in their orientation (Triandis 1994). At the individual level, however, research suggests that individualism and collectivism represent separate dimensions (Triandis and Gelfand 1998). Both individualism and collectivism can exist within the same culture (Sinha and Tripathi 1994; Triandis 1994), and a person may possess both individualistic and collectivistic tendencies (Sinha and Tripathi 1994; Triandis 1989, 1994). Different situations may cause a person to sample individualistic or collectivistic aspects of the self (Trafimow, Triandis, and Goto 1991). Thus, a person may believe in personal initiative and independence yet also value group harmony and sharing. Because the present study involves individual-level activity, we treat individualism and collectivism as two separate dimensions that pertain to the ways in which individuals relate to other individuals.

Locus of Control

Locus of control refers to the extent to which people believe that they have the ability to affect outcomes through their own actions (Rotter 1966). On the one hand, some people believe that they have substantial influence over their lives and that their actions influence particular outcomes. These people are said to have an internal locus of control (internals). They typically perceive themselves to have control over their future and believe that outcomes are related to the work they put into them (Lefcourt 1991). On the other hand, people who believe that they are relatively powerless and have little influence over outcomes are said to have an external locus of control (externals). Triandis (1984) has noted that this psychological construct of locus of control is equivalent to the cultural-level value orientation dimension of beliefs about human–nature interactions, which relates to the extent to which a cultural group believes that it is superior to nature, lives in harmony with nature, or is subjugated to nature.

Beliefs Related to Recycling

Although we expect that these abstract, fundamental value orientations (individualism, collectivism, and locus of control) will relate to people's propensity to engage in recycling, we do not expect that their effects on behavior will be direct. Instead, we expect that these fundamental values will influence more specific psychological constructs (beliefs about recycling), which in turn will influence behavior. Research in a variety of areas has shown that specific attitudes and beliefs often mediate the values–behavior relation (e.g., Alwitt and Pitts 1996; Homer and Kahle 1988; McCarty and Shrum 1994).

Two particular belief constructs that have consistently been shown to relate to recycling are a general attitude or belief about the importance of recycling and a specific belief about the inconvenience of recycling (Hines, Hungerford, and Tomera 1987; McCarty and Shrum 1994; Vining and Ebreo 1990). Therefore, we consider these two belief constructs as ones that potentially mediate the relations between value orientations and recycling behaviors.

Importance and inconvenience can be contrasted on three important and related dimensions that pertain to how they potentially mediate relations between the abstract, fundamental beliefs and specific behaviors. First, the importance

of recycling relates to the benefits of engaging in the behavior (e.g., a cleaner environment), whereas inconvenience focuses on the costs (e.g., the time required to prepare materials for collection). Second, the importance of recycling is a long-term consideration, but inconvenience is primarily short-term in nature. As we have noted, the benefits of the environment will generally only be realized in the future, and therefore people may not see these positive results in any immediate way, whereas the costs to the individual in terms of engaging in the behavior are relatively immediate. Third, the two belief constructs differ in their level of abstraction. Because the importance of recycling relates to long-term rewards for the environment and society, these beliefs tend to be more abstract and general in nature than beliefs about the inconvenience of recycling, which focus on immediate costs to the individual and tend to be more concrete and specific.

Economic Status

Although the individual-level values and beliefs we have described are the main focus of the study, other variables have been shown to be related to recycling. Several studies have investigated the relationship of demographic variables and recycling behavior, showing mixed results with respect to the impact of these variables on environmental behaviors (for reviews, see Berger 1997; Shrum, Lowrey, and McCarty 1994). Berger (1997) argues that the role of socioeconomic factors such as income and education may be a complex one, and other factors may mediate the relationship between these variables and behavior. For example, socioeconomic factors may facilitate conditions for recycling: Wealthier neighborhoods may have more access to recycling facilities, and a household's recycling may therefore be as much a function of the economic conditions of the community as of the household's own income level. A study by Jacobs, Bailey, and Crews (1984) supports this notion, finding that participation in recycling was related to the housing prices of a neighborhood. Along these same lines, Berger also notes that perceptions of the inconvenience of recycling may vary as a function of socioeconomic status: It may simply be more inconvenient for people living in smaller houses to store recyclable materials until the day they can be left for curbside pickup.

Proposed Model

The research just reviewed provides information that is useful in developing specific hypotheses about how the constructs of individualism, collectivism, and locus of control—all considered at the psychological level—as well as the construct of economic status might influence recycling behavior through the recycling beliefs about importance and inconvenience.

Individualism, Collectivism, and Recycling

The nature of the two constructs, individualism and collectivism, suggests that they may relate in different ways to the propensity for people to engage in proenvironmental behaviors. On the one hand, Sinha and Verma (1987, p. 124) note that individualism promotes "contractual relationships which are based on the principles of exchange. People calculate profit and loss before engaging in a behavior." Individualistic people also place greater importance on the relation between their behavior and their own needs and beliefs (Leung and Bond 1984). On the other hand, collectivism tends to promote a consideration of the implications of people's behavior for others. The behavior of people who are collectivistic tends to be driven by social norms, and these people show a willingness to share scarce resources (Sinha and Verma 1987). Thus, it is reasonable that a behavior such as recycling may be a function of individualism and collectivism. Individualism tends to focus a person's attention toward immediate benefits relative to costs. In the short run, however, extrinsic benefits are few relative to the perceived costs (e.g., inconvenience). Collectivist tendencies should focus a person toward group benefits, even if these benefits are not immediate.

There is some limited empirical evidence for these conjectures. McCarty and Shrum (1994), using a student sample, found that collectivism is positively related to the level of reported recycling behavior, and Hopper and Nielsen (1991) provided evidence that participation in a community recycling program is influenced by social norms. Dunlap and Van Liere (1984) found that traditional American (individualistic) values are negatively related to beliefs about resource conservation.

Therefore, people who are more individualistic will tend to focus on personal goals, and their behavior will tend to be guided by immediate benefits relative to costs. Such people are likely to consider recycling costly and as having few immediate benefits, and they are unlikely to perceive recycling as contributing to their personal goals. Given this, we predict the following:

> H_1: The degree of individualism will relate positively to the beliefs about the inconvenience of recycling. People who are more individualistic will tend to believe that recycling is more inconvenient than will those who are less individualistic.

People who are more collectivistic are more concerned with the good of the group and focus on group goals, sharing, and duty. Because collectivism relates to the impact of actions on the collective (society) and on the future, people who are more collectivistic should consider recycling more important than will those who are less collectivistic. Therefore, we predict the following:

> H_2: The degree of collectivism will relate positively to the beliefs about the importance of recycling. People who are more collectivistic will tend to believe that recycling is more important than will those who are less collectivistic.

Implicit in these two hypotheses is the assumption that individualism and collectivism are independent constructs rather than opposite ends of a single continuum, consistent with previous research on these constructs at the psychological level.

Locus of Control and Recycling

Several studies have shown that locus of control (or variables similar to it) is associated with environmental issues. Balderjahn (1988) found that greater perceived ideological control is positively related to attitudes toward ecologically conscious living and environmentally friendly purchase behavior, and Schwepker and Cornwell (1991) reported evidence showing that an internal locus of control is related to the

propensity to purchase ecologically packaged products. In a meta-analysis of previous work on environmental behavior, Hines, Hungerford, and Tomera (1987) concluded that an internal locus of control is positively related to environmentally responsible behavior. As we have noted, many polls show that most people have a positive attitude toward the environment. An internal locus of control might provide people with the belief that they can do something to change the environment; thus, internals should be more likely to believe that their actions with respect to the environment are worthwhile. Therefore, we predict the following:

H_3: An internal locus of control will relate positively to the beliefs about the importance of recycling. People who are more internal will tend to believe that recycling is more important than will those who are less internal (more external).

Economic Status and Recycling

Given previous research that suggests a relationship of the economic status of people and their communities with recycling, we expect that the income of a family, as well as the economic level of a community, will relate to perceptions of the inconvenience of recycling, thereby indirectly influencing the likelihood that a person will engage in recycling behavior. Specifically, we predict the following:

H_4: Economic status will be negatively related to perceptions of the inconvenience of recycling. People with lower incomes and/or living in areas of lower economic status will believe recycling is more inconvenient than will those with higher incomes and/or living in areas of higher economic status.

Beliefs About Recycling and Behaviors

The differences in the nature of beliefs about the importance and inconvenience of recycling lead to expectations about how these beliefs might relate to recycling behaviors. Given the differences in the level of abstraction and specificity of importance and inconvenience, we expect that the more general beliefs about importance will influence the more specific beliefs about inconvenience. That is, as people develop more positive beliefs about the long-term importance of recycling, they should hold less negative beliefs about the inconvenience of engaging in the behavior. Therefore, although we expect that beliefs about the importance of recycling will relate directly to the likelihood that a person will engage in recycling behaviors, these general beliefs about importance should also influence perceptions of the inconvenience of engaging in the behaviors, which in turn will influence the behavior. Therefore, we predict the following:

H_5: Beliefs about the importance of recycling will have a direct, positive relationship with recycling behaviors. People who believe that recycling is more important will tend to report that they recycle more than will those who believe that recycling is less important.

H_6: Beliefs about the importance of recycling will be negatively related to beliefs about the inconvenience of recycling. People who believe that recycling is more important will tend to believe that recycling is less inconvenient than will those who believe that recycling is less important.

H_7: Beliefs about the inconvenience of recycling will have a direct, negative relationship with recycling behaviors. People who believe that recycling is more inconvenient will tend to report that they recycle less than will those who believe recycling is less inconvenient.

Figure 1 shows the hypothesized relationships of the proposed model. We expect that the influence of the value orientations and economic status (the four exogenous variables) on recycling behavior will be mediated by recycling beliefs (importance and inconvenience) and in the specific ways shown in the figure. We do not expect other relationships between the exogenous variables and the mediated variables to be present. Thus, individualism and economic status are not expected to affect the importance of recycling, and collectivism and locus of control are not expected to relate directly to the inconvenience of recycling.

Method

Sample and Procedure

The data for the study were collected through a mail questionnaire sent to a stratified random sample of adults in a heavily populated Midwestern state. Only people who lived in communities in which curbside recycling was available were included in the sampling frame. Therefore, cities and suburbs in the state were first selected on the basis of the availability of recycling. Individuals within these strata were then randomly selected for inclusion in the study. Because of the need to restrict sampling to strata that provided recycling opportunities, neither the most rural areas of the state nor the major city in the state was represented in the sample. In general, the sample was obtained from ZIP codes in cities of 10,000 to 250,000 people and from ZIP codes of the suburbs of the major urban areas.

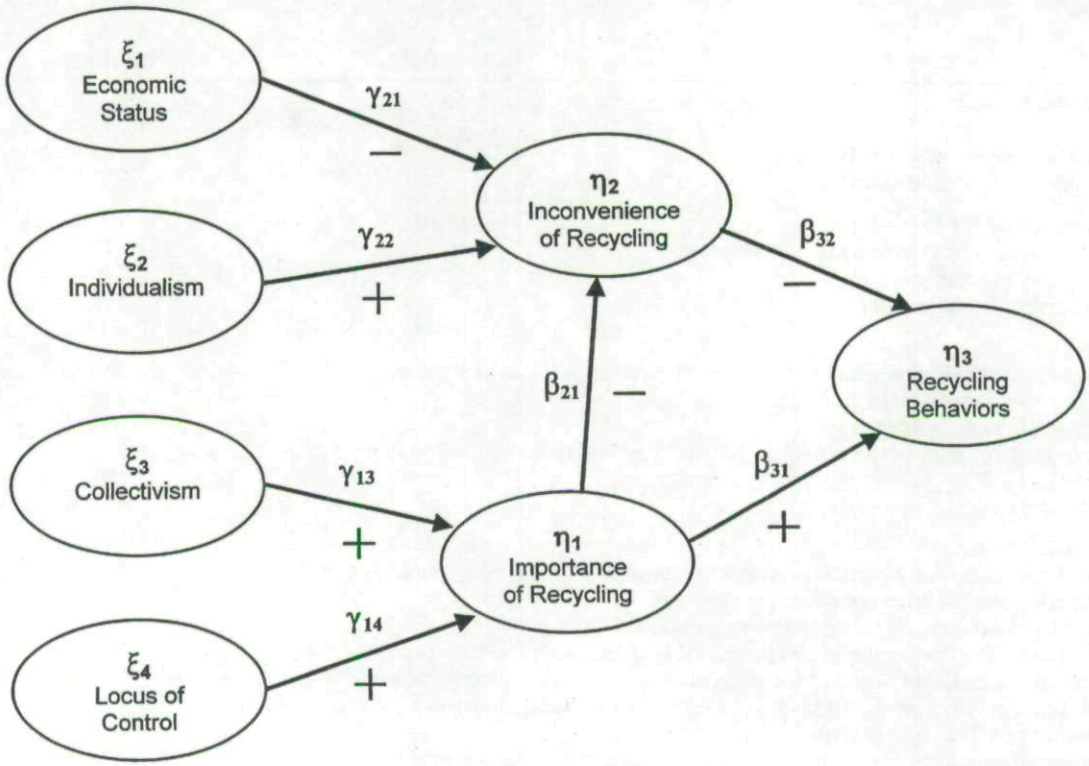
Each member of the sample was sent a questionnaire with a cover letter explaining that the study was designed to investigate the beliefs and activities of the people living in the state. The questionnaire included items on a variety of topics, including those of interest for the current study. Therefore, although several questions pertained to recycling, the focus of the study was masked to a large degree by the inclusion of items unrelated to environmental issues.

Following the recommendations of Dillman (1978), reminder postcards were sent out approximately three weeks after the original mailing to people who had not returned the questionnaire. Members of the sample who had not returned the questionnaire after another two weeks were sent a new cover letter and replacement questionnaire.

A total of 1891 surveys were mailed; 30 were returned as undeliverable, which left 1861 presumably delivered. Of the 1861 surveys delivered, 727 were returned by the respondents, for a return rate of 39.1%. Of those responding, 57.9% were male,[2] the median income was $45,000, age ranged from 18–92 years with an average of 48 years, and the average number of years of education was 14.6. A total of 193 respondents were excluded from the analyses because they had missing data on one or more measures used in the present study. Thus, the analyses were based on 534 respondents.

[2]The overrepresentation of male respondents was a function of our selection criteria and not a result of response bias. Parts of the questionnaire were used for purposes unrelated to this study, and these purposes necessitated holding sex constant for a subset of the entire sampling frame.

Figure 1. Proposed Model of the Relations Among Value Orientations, Economic Status, Recycling Beliefs, and Behavior



Measures

We measured each latent construct using multiple indicators. The particular items used to measure each construct appear in Table 1.

Exogenous Measures

The four exogenous latent factors in the study were economic status, individualism, collectivism, and locus of control. Three variables were used to measure economic status. One of these was the family income of the respondent as reported in the questionnaire. Respondents selected 1 of 11 categories; the first was $0–$10,000, and the categories continued with $10,000 ranges up to $100,000. The final category was "more than $100,000." The other two variables considered for the economic status construct were from the 1990 U.S. Census. These were the median housing value and the per capita income of the ZIP code area in which each respondent resided.

Five items were used to measure collectivism and three items were used to measure individualism. These items were similar to ones used in previous studies (Breckler, Greenwald, and Wiggins 1986; Han 1991). Respondents were asked to evaluate these items on five-point scales with anchors of "not at all important" (1) and "extremely important" (5).

Ten items from a scale developed by Paulhus (1983) were used to measure locus of control. Paulhus partitioned locus of control into three distinct and independent behavioral spheres; the sphere deemed most appropriate for the current study was sociopolitical control (control in large-group [societal] situations). The items composing this measure of locus of control scale were evaluated on six-point scales with anchors of "strongly disagree" (1) and "strongly agree" (6). Higher scores on these measures indicate a more internal locus of control.

Endogenous Measures

The measures of beliefs about the inconvenience and importance of recycling were also evaluated on six-point agreement scales and were similar to ones used in previous studies (McCarty and Shrum 1994; Williams 1991). Two items were related to the inconvenience of recycling and three items were related to the importance of recycling.

The behavioral measures consisted of three items that measured the extent to which respondents recycled newspapers, cans, and glass/jars in their households. The frequency of these recycling activities was evaluated on seven-point scales with anchors of "never" (1) and "always" (7).

Analysis

We used structural equation analysis by means of EQS (Bentler 1995) to evaluate a measurement model and a causal model simultaneously, using the maximum likelihood estimation method. Thus, the analysis evaluated the extent to which the observed variables were indicators of the latent constructs in the model and the strength of the relationships among the latent variables as specified by the hypothesized paths. We evaluated the viability of the specific hypotheses

Table 1. Measurement Model Results

Construct	Standardized Factor Loading	t-Value
ξ_1 *Economic Status* (α = .761)		
Income	.377	8.45
Median household value (of ZIP code area)	.932	23.37
Per capita income (of ZIP code area)	.912	11.21
ξ_2 *Individualism* (α = .440)		
Being unique, different from others in many respects.	.418	4.93
Being competitive with others.	.276	3.74
Working independently from others.	.698	5.43
ξ_3 *Collectivism* (α = .746)		
Working hard for the goals of a group even it doesn't result in personal recognition.	.555	12.42
Being a cooperative participant in group activities.	.570	11.24
Readily helping others in need of help.	.647	13.58
Doing what is good for most of the people in the group, even if it means that the individual will receive less.	.607	13.27
Sharing with others.	.661	13.56
ξ_4 *Locus of Control* (α = .816)		
There is very little we, as consumers, can do to keep the cost of living from going higher. (R)	.521	12.59
With enough effort we can wipe out political corruption.	.528	12.35
The average citizen can have an influence on government decisions.	.730	20.57
This world is run by the few people in power, and there is not much the little guy can do about it. (R)	.545	12.38
By taking an active part in political and social affairs we, the people, can control world events.	.743	18.36
When I look at it carefully, I realize it is impossible to have any really important influence over what politicians do. (R)	.679	17.22
I prefer to concentrate my energy on other things rather than on solving the world's problems. (R)	.328	7.00
One of the major reasons we have wars is because people don't take enough interest in politics.	.372	8.28
In the long run we, the voters, are responsible for bad government on a national as well as local level.	.512	11.48
It is difficult for people to have much control over the things politicians do in office. (R)	.600	13.94
η_1 *Recycling Beliefs: Importance* (α = .643)		
Recycling will reduce pollution.	.608	a
Recycling is important to save natural resources.	.552	7.63
Recycling will save land that would be used as dump sites.	.674	7.87
η_2 *Recycling Beliefs: Inconvenience* (α = .685)		
Recycling cans, bottles, newspapers, etc. is inconvenient.	.747	a
I hate having to wash out bottles for recycling.	.690	10.16
η_3 *Recycling Behaviors* (α = .874)		
I recycle newspapers used at home.	.818	a
I recycle cans used at home.	.803	15.53
I recycle glass jars/bottles used at home.	.889	20.12

Notes: (R) indicates items that were reversed-scored. a = fixed during analysis, no t-values given. All loadings are significant at $p < .001$.

by the significance of specific paths between latent constructs. We assessed the reliabilities of the measures by Cronbach's alphas. We tested individual parameters in the proposed model (factor loadings and hypothesized paths of the model) by univariate t-tests and used robust standard errors (Bentler 1995) to form the test statistics because of their ability to protect against violations of the assumption of multivariate normality of the observed variables. We evaluated the overall fit by the standardized root mean squared residual (SRMR; Bentler 1995) and the root mean square error of approximation (RMSEA; Steiger 1990).[3]

The overall fit of the proposed model was evaluated in a nested manner as recommended by Anderson and Gerbing (1988). The proposed model was tested against a baseline model that included no directional paths among the latent

[3]The difference in χ^2 values for nested models (as these models are) is itself distributed as a χ^2 with degrees of freedom equal to the difference in the degrees of freedom of the models being considered. The other two fit statistics were selected because they are sensitive to different aspects of evaluating a proposed model. The SRMR is an analysis of the residuals between the hypothetical covariance matrix and the fitted covariance matrix; Hu and Bentler (1998) indicate that among indices they tested, the SRMR was the most sensitive to misspecified factor covariances. The RMSEA is an indication of the lack of fit of the model to the population covariance matrix; Hu and Bentler (1998) found that it is particularly sensitive to models with misspecified factor loadings. Hu and Bentler (1999) suggest a cutoff of .08 for the SRMR and .06 for the RMSEA before researchers conclude that they have an adequate fit of a hypothesized model.

Table 2. Causal Model Results: Correlations Among Exogenous Constructs and Standardized Path Coefficients Among Latent Constructs

	Proposed Model		Mediated/Direct Model	
	Coefficient	t-Value	Coefficient	t-Value
Correlations Among Exogenous Variables				
ϕ_{12}: Economic status ↔ individualism	.034	.54	.029	.51
ϕ_{13}: Economic status ↔ collectivism	–.066	–1.24	–.066	–1.25
ϕ_{14}: Economic status ↔ locus of control	.009	.19	.009	.19
ϕ_{23}: Individualism ↔ collectivism	–.023	–.33	–.041	–.63
ϕ_{24}: Individualism ↔ locus of control	–.076	–1.09	–.090	–1.39
ϕ_{34}: Collectivism ↔ locus of control	.252	4.62***	.252	4.63***
Standardized Path Coefficients				
γ_{21}: Economic status → inconvenience	–.197	–4.58***	–.169	–3.74**
γ_{22}: Individualism → inconvenience	.138	1.96*	.139	2.01*
γ_{13}: Collectivism → importance	.223	3.20**	.225	3.23**
γ_{14}: Locus of control → importance	.307	4.16***	.304	4.11***
γ_{31}: Economic status → recycling behaviors			.115	2.64**
γ_{32}: Individualism → recycling behaviors			.051	.95
γ_{33}: Collectivism → recycling behaviors			–.007	–.12
γ_{34}: Locus of control → recycling behaviors			.021	.44
β_{21}: Importance → inconvenience	–.387	–4.99***	–.386	–4.99***
β_{31}: Importance → recycling behaviors	.139	2.12***	.148	1.87
β_{32}: Inconvenience → recycling behaviors	–.544	–7.36***	–.516	–6.65***
	R^2		R^2	
$R^2_{\eta 1}$ (Importance)	.179		.177	
$R^2_{\eta 2}$ (Inconvenience)	.207		.198	
$R^2_{\eta 3}$ (Recycling behaviors)	.375		.378	

*$p < .05$.
**$p < .01$.
***$p < .001$.

constructs and a model that included the hypothesized mediated paths as well as direct paths from the exogenous constructs and recycling behavior (mediated/direct model). The appropriateness of these models was evaluated by the change in χ^2 relative to the change in degrees of freedom. The Satorra–Bentler scaled χ^2 (Bentler 1995) was used because it is robust to deviations from multivariate normality. The Lagrange-Multiplier test (Bentler 1995) was used to evaluate whether the addition of individual paths not hypothesized in the proposed model would significantly improve the fit of the model.

Results

Measurement Model

Table 1 provides information about the quality of measurement of the latent constructs in the model. As the standardized factor loadings in the table show, all the measured variables loaded on the latent constructs as expected. Except for the individualism construct, the Cronbach's alphas for the measured variables for each of the latent constructs were in the acceptable range, which indicates that they are generally reliable measures of the latent constructs. The low alpha for individualism suggests that it was not measured reliably, and therefore its relation with other variables should be interpreted with caution.

An additional consideration of the measurement model relates to our expectation that individualism and collectivism would emerge as distinct constructs at the psychological level. As the top portion of Table 2 shows, the correlation between the individualism and collectivism factors was not significant for the proposed model. The only significant correlation among the exogenous factors was a moderate, positive relation between collectivism and locus of control. Therefore, the different exogenous variables can be considered to represent relatively independent sources of variation.

Proposed Model: Hypothesized Relationships

Exogenous Predictors

We expected that the degree of individualism would relate positively to perceptions of the inconvenience of recycling; people who are more individualistic should perceive recycling as more inconvenient than will those who are less individualistic. As the middle portion of the proposed model columns of Table 2 shows, this path was significant and in the predicted direction. Thus, H_1 was supported. We also expected that degree of collectivism (H_2) and internal locus

Table 3. Model Fit Summary for Competing Models

Model	χ^2	Degrees of Freedom	$\Delta\chi^2$	ΔDegrees of Freedom	SRMR	RMSEA
Baseline	941.86	372	—	—	.092	.057
Proposed	707.37	364	234.49*	8	.052	.046
Mediated/direct	699.44	360	7.93	4	.051	.046

*$p < .01$.

of control (H_3) would relate positively to the importance of recycling. The results shown in Table 2 (proposed model columns) indicate that these hypotheses were supported. The standardized path coefficients for each of these paths were significant and in the predicted direction. Finally, we expected that economic status would show a negative relationship with inconvenience such that people with a lower economic status would perceive recycling as more inconvenient than would those with a higher economic status (H_4). As the results for the proposed model show, this hypothesis was supported.

Endogenous Predictors

We expected that beliefs about the importance of recycling would relate positively to the recycling behavior (H_5) and negatively to beliefs about the inconvenience of recycling (H_6). The results shown in the bottom portion of Table 2 for the proposed model indicate that these two hypotheses were supported. We also expected that beliefs about the inconvenience of recycling would relate negatively to recycling behavior (H_7); this too was supported. Thus, beliefs (both importance and inconvenience) were related to recycling behavior in the expected ways. As shown at the bottom of Table 2, somewhat more than one-third of the variability in recycling behaviors is explained by the proposed model

Mediated/Direct Model

The mediated/direct model of Table 2 provides a test of the extent to which the relationships of the exogenous variables (the fundamental values and economic status) to recycling behavior are mediated by the recycling beliefs. Complete mediation is evident if the direct paths between the exogenous variables and recycling behavior are not significant.[4]

When direct relationships between the exogenous variables and recycling behavior were considered in conjunction with mediated relationships, there was a significant, direct relation between economic status and recycling behaviors, as shown in Table 2. Economic status appears to have an influence on behavior that is mediated by inconvenience, as hypothesized, and a direct effect that is over and above this mediated influence. All other direct relationships between the exogenous factors and recycling behavior were not significant, which indicates that the relation of collectivism and locus of control with recycling behavior was completely mediated by importance and that the influence of individualism on recycling was completely mediated by beliefs about the inconvenience of recycling.

Tests of Additional (Nonhypothesized) Paths

We used the Lagrange-Multiplier test to determine whether additional paths from the exogenous variables to the mediators (e.g., economic status to importance) would provide a significant improvement in fit. No additional paths were found to improve the fit of the model significantly. Thus, as expected, degree of individualism and economic status were unrelated to beliefs about the importance of recycling; collectivism and locus of control did not show significant, direct relationships with beliefs about the inconvenience of recycling.

Hierarchical Tests of Models

Table 3 shows the measures of overall goodness of fit for a null model (a model specifying no directional paths among the latent constructs), the proposed model, and the mediated/direct model. As the fit indices indicate, the proposed model fit the data well in that the SRMR was below .08 and the RMSEA was below .06. Moreover, as the change in χ^2 relative to the change in degrees of freedom indicates, the fit of the proposed model was a significant improvement over the fit of the null model.[5] The change in χ^2 relative to the change in degrees of freedom for the mediated/direct model compared with the proposed model suggests that estimating all of the direct relationship between the exogenous constructs and recycling behavior did not significantly improve the fit.[6]

[4]The comparison of the proposed model with this mediated/direct model represents an important consideration, because it is necessary for the mediated paths to be significant in the presence of the direct paths from the exogenous variables to behavior for mediation to be evident (Baron and Kenny 1986); a completely mediated relationship is suggested if the direct path that corresponds to a mediated relationship is not significantly different from zero when mediation is tested. According to Baron and Kenny, additional requirements to establish mediation are that (1) the exogenous variables are correlated with the outcome variables, (2) the exogenous variables are correlated with the mediators in the expected manner, and (3) the mediator affects the outcome variable. Tests were conducted that determined that these three requirements were met.

[5]The removal of the directional paths between the latent variables to test the baseline model led to the underidentification of the endogenous variable inconvenience because there were only two indicators of this latent construct. The error variances of the two indicators of this construct were constrained to be equal, which thus corrected the underidentification for this baseline model.

[6]A model, similar to the proposed model but with the addition of the direct path of economic status to recycling behaviors, significantly improved the fit compared with the proposed model. This would be expected, because this direct path was significant for the mediated/direct model. All the significant hypothesized paths of the proposed model were also significant for this revised model.

Discussion

The results of this study provide new information regarding the antecedents of recycling behavior. Previous research has shown, for example, that beliefs about the importance of recycling and beliefs about the inconvenience of recycling are stable predictors of the propensity of consumers to recycle. These findings are intuitive. However, this study's results suggest that these relationships are not that simple. For some people, such as those who are more individualistic or have a lower economic status, the importance of recycling is not a motivating issue; only inconvenience predicts recycling behavior. For others, such as those who are more collectivistic or have a more internal locus of control, beliefs about the importance of recycling are positively related to the propensity to recycle. As are the constructs of individualism and economic status, collectivism and locus of control are related to beliefs about the inconvenience of recycling, but in a different way: Collectivism and locus of control relate to beliefs about inconvenience, but only through the mediating influence of beliefs about the importance of recycling.

The results of this study also shed some light on the relation between economic status and recycling behavior. Some research suggests that this relation is mediated by access to recycling (Berger 1997). That is, people who have a higher economic status tend to have greater access to recycling than do those who have a lower economic status, and this access differential influences recycling behavior. Implicit in this notion is that less access leads to more inconvenience. The results of this study support this contention: Economic status was negatively related to beliefs about the inconvenience of recycling, which in turn negatively influenced recycling behavior. Note, however, that economic status did not show any relation to beliefs about the importance of recycling, only to inconvenience.

Implications for Marketing and Public Policy

The importance of these findings to marketing and public policy practices centers on the complex interplay of the antecedents of recycling behavior. This study focused on two belief constructs that have consistently been shown to predict recycling behavior: inconvenience and importance. The results of this study depart from previous ones by demonstrating that the manner in which beliefs about the importance and inconvenience of recycling are predictive of behavior varies across types of people.

We have shown that importance has both a direct effect on recycling behavior and an effect on perceptions of the inconvenience of recycling, which in turn predict recycling behavior. To the extent that people's perceptions about the importance of recycling can be changed, this should have a two-pronged influence on behavior. First, as people's beliefs in the importance of recycling increase, the likelihood that they will engage in the behavior should also increase. Second, increasing people's beliefs in the importance of recycling should, over time, change their perceptions of the inconvenience of recycling. That is, as consumers begin to understand the importance of recycling for the environment and for their own and future generations, this should influence their thoughts about the inconvenience of engaging in recycling behaviors. Thus, importance will have an influence on recycling behavior through this indirect route.

The extent of such efforts, however, will likely depend on the value orientations held by particular people. Our main focus in this study was how these value orientations relate to recycling beliefs and behavior, and our findings with respect to these relations also have certain policy implications. The implications are mainly related to segmentation and targeting efforts and in particular to what types of messages are constructed to persuade people to recycle more. One clear implication is that because the path to behavior varies as a function of value orientation, the appeal of a persuasive communication should also vary according to the value orientation of the target. In particular, the importance of recycling is a critical mediator of recycling behavior and thus should be addressed in a persuasive communication—but only for people high in collectivism. For those high in individualism, only inconvenience is a potential mediator, and therefore attempts to change beliefs regarding the importance of recycling for those people may have little direct effect on recycling behavior.

These recommendations are consistent with several studies in cross-cultural consumer behavior. For example, the persuasiveness of advertising appeals has been shown to vary across cultures; appeals that stress individualistic benefits are more persuasive in individualistic cultures than collectivistic cultures (United States versus Korea), and appeals that stress group (family) benefits are more persuasive in collectivistic cultures than in individualistic cultures (Han and Shavitt 1994). Therefore, communications aimed at changing recycling attitudes and behavior should attempt to match the focus of the benefits (individual/inconvenience versus group/importance) to the predominant value orientation of the target. Other research provides more support for this notion: Aaker and Maheswaran (1997) found that the extent to which people consider particular cues or information (e.g., consensus information versus attribute information) pertinent to a particular judgment varies across cultures. Finally, research has also shown that the persuasiveness of types of emotional appeals (e.g., ego-focused versus other-focused) used in persuasive communications varies as a function of the value orientation of the message recipient (Aaker and Williams 1998). The results of these studies, coupled with the results of our study, provide clear direction in the design of persuasive communications.

In terms of segmentation, the results of this study suggest that the easiest people to influence may be those who are collectivistic and/or have an internal locus of control. Communication efforts need to remind people high in collectivism of the importance of the behavior for the society. People with an internal locus of control may only need to be reminded that their behavior in the area of the environment will make a difference.

Others may require more effort to reach and convince. People high in individualism but low in collectivism are probably the most difficult to change. If people who are high in individualism tend to think in terms of short-term benefits relative to costs, marketing communications efforts may be used to shift the time frame and context of the benefits that recycling provides to coincide with the short-term nature of

perceived costs. That is, communication efforts can focus on how the benefits of recycling are more immediate and can hit closer to home than people might think. There is some evidence that such a strategy would pay off. White (1999) reported that the city of Boston used an advertising campaign to influence nonrecyclers that focused on neighborhood-specific themes and consequently made the benefits more immediate and localized to the nonrecyclers' areas.

Another approach that may work with people who are high in individualism is to make other rewards and benefits salient to them. De Young (1985–86) has shown that intrinsic motivations (i.e., personal satisfaction) can play a role in recycling behavior. To the extent that these immediate intrinsic rewards can be made salient to individualists, such benefits may aid in overcoming these people's resistance to recycling because of their typical perceptions of high costs relative to low short-term benefits.

The most interesting communications challenge relates to this study's finding that individualism and collectivism can coexist within a person, which replicates previous work on the psychological nature of these constructs. As noted, a person can be high in both individualism and collectivism. The marketing challenge in these cases may be to induce people to think collectivistically rather than individualistically. As Trafimow, Triandis, and Goto (1991) argue, different situations and contexts can influence whether people sample either their collectivistic or individualistic selves. This suggests that marketing communication efforts aimed at increasing recycling can benefit from an approach that causes people high in individualism to sample their collective selves rather than their individualistic selves, thus shifting their considerations from the costs of the behaviors to the rewards.

Although segmenting on the basis of such individual differences has typically been viewed as too difficult, it may be easier than it sounds. Given the fragmented and narrowly targeted nature of today's media (Turow 1997), it may be possible and even relatively easy to reach audiences that hold similar basic beliefs. Thus, if the readership of a particular magazine is known to have a more individualistic or collectivistic orientation (e.g., readers of *Forbes* versus readers of *The Progressive*), different appeals can easily be constructed for targets with different value orientations.

Although we have stressed the contribution of individual, psychological constructs (i.e., value orientations) on recycling behavior and their implications for policy, the relationship of economic status (primarily the economic status of the community) and recycling behavior demonstrates that efforts to increase recycling compliance should be considered at various levels. Community-level action that will make recycling more accessible, particularly in lower income areas, will complement the segmentation and communication efforts we have described.

Limitations of the Study

There are a few limitations to the present study that readers should consider when drawing conclusions from the results. The first limitation pertains to the narrow focus of the study. Our primary interest was in understanding how value orientations, measured at the psychological level, relate to recycling beliefs and behavior. Because of this interest, we focused on a limited set of antecedents to the behaviors. Therefore, several known antecedents to recycling (e.g., knowledge, social norms) were not included in the study. Furthermore, this study was limited to the proenvironmental behavior of recycling. Thus, although the study has advanced the understanding of how value orientations relate to recycling, it does not specifically address recycling in the broader context of the full range of antecedents to the behavior, nor does it specifically address the relationship of these orientations to other environmental behaviors.

A second limitation pertains to population and sample issues. In our study, the population was limited to communities where curbside recycling was available. The results thus may not represent areas where recycling would be either more difficult (i.e., no recycling made available by the municipality) or far more easy (i.e., the separation is done by the municipality). Clearly, people's perceptions of inconvenience would be influenced by the ease of recycling in the area where they live. With respect to the sample, the return rate was healthy for a mail survey to a general population sample; however, the nature of the nonrespondents is not known. Nonresponse bias in surveys is most critical when a researcher is interested in describing a population rather than understanding the relationship among a set of variables. In this respect, the focus of this study was not to report the incidence of recycling but rather to shed light on the complex relationships between beliefs and behavior. It seems unlikely that the nature of these relationships would differ dramatically between people who responded and people who did not.

It is also worth noting that the effect sizes observed in this study were not large. At first glance, it might not seem fruitful or cost effective to implement the recommendations we made with regard to segmentation and targeting. Low effect sizes are often the norm when measuring input into social behavior in uncontrolled settings. Our findings simply show that the variables we measured (however imperfectly) have an influence on a particular behavior, and this influence has implications for what types of messages might prove most persuasive. Given the large size of the target (those who have the ability to recycle) and the relatively low compliance in many cases, even a small change would be welcome.

In this study, we have attempted to provide a better understanding for the motivations underlying proenvironmental behavior. In doing so, we have drawn on theory and research in several domains, but in particular that which focuses on abstract but fundamental beliefs about the interaction of humans with their environment and with other humans. We have shown that these fundamental psychological constructs relate to beliefs and behavior in logical and predictable ways. Understanding these relations, we believe, has important implications for understanding and promoting proenvironmental and other prosocial behaviors.

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