

DETERMINANTS OF THE PROENVIRONMENTAL CONSUMPTION BEHAVIOR OF CHINESE RURAL RESIDENTS

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We examined the influence of Chinese traditional cultural, psychological, and sociological factors on the proenvironmental consumption behavior (PCB) of Chinese rural residents. The results show that Chinese traditional culture (man–nature orientation and collectivism), personal attitudes (environmental cognition and environmental affect), and reference groups had a significant positive influence on proenvironmental consumption intention, which, in turn, increased PCB. Theoretical and practical implications of the findings are discussed.

Keywords: proenvironmental consumption behavior, Chinese traditional culture, personal attitudes, reference groups, Chinese rural residents.

China has achieved remarkable economic success after over 30 years of reform. However, this development was paralleled by environmental degradation. At present, China faces imminent environmental issues, such as climate change, desertification, water pollution, heavy haze, soil erosion, and deforestation.

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Moreover, China is one of the largest and most polluted countries in the world, ranking 118 out of 178 countries, in relation to the effectiveness of a country's policies on environmental protection (Hsu et al., 2014). Despite the various measures adopted by the Chinese government to strengthen environmental protection, China's environmental problems remain severe.

Many of these environmental problems are rooted in human behavior. McDougall's (1993) assertion that the active participation of consumers is essential is supported by evidence that 57% of environmental degradation is the result of the consumption activities of private households (Minx et al., 2013). Therefore, residents of developed and developing countries must shift toward proenvironmental consumption behavior (PCB) to prevent further environmental deterioration. In line with this shift, cross-cultural and international research on the predictors of PCB must be conducted to successfully protect the environment in the future. Research should also be expanded into non-Western contexts. We believe that China is the most appropriate area for this expansion because its economy has developed more quickly than those of other major nations in the past three decades, thereby fueling unprecedented environmental degradation and pollution.

In recent years, scholars and policy makers have focused increasingly on environmentalism in China. Identifying the determinants of PCB will enhance understanding of the effects of psychological and social factors on the PCB of Chinese consumers (Tang, Chen, & Luo, 2011). However, not only has comparatively less attention been paid to the PCB of Chinese rural residents, to our knowledge, very few studies have been conducted in which the sociopsychological determinants of PCB of mainland Chinese rural residents, and the effect levels of these factors, have been identified. In this study our aim was to identify the potential effects of sociopsychological factors, and the magnitude of these effects, on the PCB of mainland Chinese rural residents, using structural equation modeling (SEM). We investigated the personal attitudes of rural residents, that is, their environmental cognition and environmental affect toward environmental issues; Chinese traditional culture, that is, man–nature orientation (MO) and collectivism (CO); and the potential influence of reference groups (RG) on the PCB of rural residents.

Literature Review and Hypotheses Development

Proenvironmental behavior may be ideally viewed as a mixture of self-interest and of concern for other individuals, the next generation, other species, or whole ecosystems (Bamberg & Möser, 2007). Thus, *proenvironmental consumption* refers to purchasing behavior that minimizes harm to the environment and even benefits it.

Various sociopsychological constructs have been identified and widely researched as important determinants of proenvironmental behavior. They include demographic variables (Robinson & Smith, 2002), knowledge (Bartkus, Hartman, & Howell, 1999; Pedersen & Neergaard, 2006), affect (Chan, 2001), attitudes (Wray-Lake, Flanagan, & Osgood, 2010), and habits (Lebel & Lorek, 2008). However, the nature of the relationships of these factors with proenvironmental behavior remains unclear (Bamberg & Möser, 2007). Peattie (2010) pointed out that currently researchers generally consider consumers as individuals. However, consumers may be influenced by RG, such as family members, household members, friends, neighbors, relatives, or communities. Therefore, the development of sustainable consumption patterns may require increased collective behavior. Researchers could thus examine the potential influence of RG and collective consumption initiatives and behavior. In this study we developed a conceptual model and formulated hypotheses based on a review of the literature in regard to the factors being investigated, and their possible relationships with PCB.

Chinese Traditional Culture: Man–Nature Orientation and Collectivism

We assessed the potential influence of Chinese traditional cultural values on PCB, based on how these values may shape the views of Chinese people on environmental issues. Five decades ago, Kluckhohn and Strodtbeck (1961) developed a value-orientation framework to describe the uniqueness of Chinese culture. In this framework, MO is one of the most important dimensions of Chinese traditional culture. Chan, Wong, and Leung's (2008) contention that the Chinese strongly emphasize living in harmony with nature is largely influenced by the ideas of Lao Tzu (a renowned philosopher in ancient China), in whose philosophies humans are presented as only a component of nature. Therefore, instead of trying to master nature, humans should learn how to adapt to it, to achieve a man–nature unity (Chan et al., 2008). The Chinese MO is akin to Western ecocentric orientation. Chan (1999) empirically demonstrated that Chinese residents are comparable with Americans in terms of actual commitment to proenvironmental activities, and that the Chinese are even more emotionally attached to environmental issues than are Americans. In addition, Ye (2000) indicated in another proenvironmental survey, that over 75% of Chinese consumers exhibit a strong intention to purchase green products. Therefore, we proposed the following hypothesis:

Hypothesis 1: The man-nature orientation of Chinese rural residents will have a significant positive influence on their proenvironmental consumption intention.

Many scholars have examined the collectivist nature of the Chinese with regard to how they view their relationships (Chan et al., 2008; Li, 1997). According to Hofstede (1997), *Collectivism* stands for “a society in which people from birth

onwards are integrated into strong, cohesive in-groups which, throughout people's lifetime, continue to protect them in exchange for unquestioning loyalty" (p. 51). The Chinese culture rates very high on collectivism compared with Western culture. Proenvironmental behavior is displayed in China in groups whose members bond as family, friends, neighbors, relatives, or communities. This behavior includes sharing information regarding ecofriendly products, making arrangements for conservation, recycling, and managing energy consumption. In addition, in collectivist societies, activities that damage the environment result in a loss of face within social circles. Furthermore, the social structure of a collectivist society reflects an environmentally friendly community (Hofstede, 2001). Some researchers have also confirmed the positive association between CO and ecofriendly consumption (Chan, 2001; Li, 1997). Therefore, we proposed the following hypothesis:

Hypothesis 2: The collectivism of Chinese rural residents will have a significant positive influence on their proenvironmental consumption intention.

Personal Attitudes: Environmental Cognition and Environmental Affect

Maloney and Ward (1973) advocated the importance of environmental cognition, environmental affect, behavioral intention, and actual behavior in enhancing understanding of proenvironmental behavior. Chan (2001) and Culiberg and Bajde (2013) asserted that individuals' proenvironmental behavior is highly dependent on their environmental cognition, environmental affect, and intention.

Environmental cognition (EC) refers to an individual's general knowledge of facts, concepts, and relationships, with respect to the natural environment and its major ecosystems. EC is often assumed to be a driver of PCB. Bartkus et al. (1999) determined that, in particular, both self-reported and objectively measured environmental knowledge positively affect proenvironmental behavior. However, Pedersen and Neergaard (2006) reported that increasing the amount of information available for consumers does not necessarily change their purchasing behavior. In contrast, Hines, Hungerford, and Tomera (1987), in their meta-analysis, noted a moderate positive association between environmental knowledge and behavior, with a mean correlation of .30. In this study we verified the perspective that in general EC is positively related to proenvironmental behavior. Thus, we proposed the following hypothesis:

Hypothesis 3: The environmental cognition of Chinese rural residents will have a significant positive influence on their proenvironmental consumption intention.

In comparison, the positive association between environmental affect (EA) and behavior is supported by consistent empirical evidence (Carrus, Passafaro, & Bonnes, 2008), with Bamberg and Möser (2007) reporting a mean correlation of .37 in their meta-analysis of 57 studies. In addition, Carrus et al. determined that

intuitive and emotional factors were more important in shaping proenvironmental behavior than were objective factors related to knowledge and economic rationality. Some researchers also indicated that people display a strong emotional attachment to the environment despite having little knowledge of environmental issues such as global warming and acid rain (Li, 1997). Martin and Simintiras (1995) also suggested that the respective influences of environmental knowledge and EA on proenvironmental behavior are independent. Therefore, in this study we treated these factors as two distinct variables that influence proenvironmental consumption intention separately. Thus, we proposed the following hypothesis:

Hypothesis 4: The environmental affect of Chinese rural residents will have a significant positive influence on their proenvironmental consumption intention.

Reference Groups

Consumption behavior reflects not only individual attitudes but also their social relationships and obligations, such that they behave not only as an individual but also as a member of families, communities, and social networks. Recently, Welsch and Kühling (2009) emphasized the importance of RG in PCB. Park and Lessig (1977) identified RG influence as being informational, utilitarian, and value-expressive. *Informational* influence enhances consumers' individual knowledge and ability to cope with environmental issues through information, whereas *utilitarian* influence occurs when the RG mediates rewards or punishments. This influence is especially effective if consumers believe that their proenvironmental behavior is publicized (Gupta & Ogden, 2009). The *value-expressive* influence relates to individuals' motivation to support their self-concept. Individuals are expected to associate themselves with positive referents or dissociate themselves from negative ones. Each type of influence pressures consumers to either strengthen or lessen their proenvironmental consumption (Gupta & Ogden, 2009). Given that CO is a distinguishable trait of Chinese culture, Chinese consumers often endeavor to conform to group norms; therefore, they tend to purchase products or brands recommended by other group members (Yang, He, & Lee, 2007). Thus, we proposed the following hypothesis:

Hypothesis 5: The reference groups of Chinese rural residents will have a significant positive influence on their proenvironmental consumption intention.

Proenvironmental Consumption Intention

In empirical studies, a significant positive relationship has in general been demonstrated between proenvironmental consumption intention (PCI) and behavior (Lebel & Lorek, 2008). In addition, Bamberg and Möser (2007) reported a mean correlation of .52 between these two variables in their meta-analysis. These results support the proposition that intention is the most important predictor of behavior, in line with Ajzen and Fishbein's (1980) theory of planned behavior. Therefore, we proposed the following hypothesis:

Hypothesis 6: The proenvironmental consumption intention of Chinese rural residents will have a significant positive influence on their proenvironmental consumption behavior.

Method

Participants

Participants mainly comprised men ($n = 812$, 83.5%), with only 16.5% ($n = 160$) being women. People aged between 33 and 55 years constituted 81.9% ($n = 796$) of the participants of whom 66.2% ($n = 643$) headed large families (more than five persons). Over three-quarters of respondents ($n = 748$, 77%) reported an annual household income of approximately RMB 20,000–50,000 (US\$ 3,000–8,000). Approximately 80% ($n = 789$) had attained an educational level of junior high school or below; only 7% ($n = 68$) reported an educational level of university undergraduate or above. The participants' demographic characteristics are similar to those of the rural residents of Jiangxi Province as a whole (Jiangxi Statistical Yearbook, 2013).

Procedure

Door-to-door personal interviews were conducted with 1,000 randomly selected rural residents of Jiangxi Province, China. Specifically, we employed a three-stage sampling strategy. In the first stage, 10 county units were randomly selected from the 100 counties of this province. Five villages were then chosen at random from within each county. In the final stage, 20 households were selected from each village sample through systematic random sampling. The head of each selected household was then regarded as the survey subject because the concepts of environmental protection and proenvironmental consumption are relatively new in China. We considered that, particularly in Chinese rural areas, it was less likely that other family members would be capable of fully comprehending the issues (Tang et al., 2011). Trained Chinese interviewers visited the head of each family to conduct the survey, and to give a telephone card worth RMB 10 to each respondent to encourage cooperation. Responses were anonymous to encourage participants to be honest. We obtained 972 usable survey forms after 28 invalid responses were eliminated.

Measures

The measures, which were developed based on English-language scales, were subsequently translated into Chinese so that the respondents could understand them. Equivalence between the Chinese and the English versions was ensured through careful checking and back-translation.

MO was measured with items developed by Chan (2001), who examined the MO of Chinese consumers in five statements on green purchasing behavior. Respondents rate the five statements on a scale ranging from 1 = *do not agree at all* to 7 = *strongly agree*. CO was measured with an instrument developed by McDougall (1993). There are three items rated on a scale ranging from 1 = *not at all important* to 7 = *extremely important*.

A knowledge scale, which was used to measure respondents' EC, was based on five key environmental issues (Bohlen, Schlegelmilch, & Diamantopoulos, 1993) scored according to a 7-point itemized category format (1 = *know nothing about*, 7 = *know a great deal about*). The EA scale consists of seven statements scored on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). This scale, which measures the concern of respondents about environmental problems, was developed by Fraj and Martinez (2007) in an ecological consumer behavior study.

The RG influence scale comprises six carefully worded statements that reflect the three RG influences and are based on the RG influence scale developed by Park and Lessig (1977). Responses were recorded on a widely used 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Three items were used to measure the PCI of respondents (Li, 1997) and responses were coded on a 7-point Likert scale ranging from 1 = *very unlikely* to 7 = *very likely*.

One month after respondents had completed the measurement scales, they were contacted to assess their PCB. We measured this behavior using three self-report items, as follows: the frequency with which proenvironmental products were purchased in the previous month (1 = *never*, 7 = *at every opportunity*; Chan, 2001); the amount spent on proenvironmental products in the past month (1 = *none*, 7 = *much money*; Homer & Kahle, 1988); and the percentage of shopping for proenvironmental products in the total consumption of the previous month (1 = *very low*, 7 = *very high*; Chan, 2001). The respondents who reported purchasing proenvironmental products were asked to show them to the researchers.

Results

Assessment of the Measurement Model

When the reverse-scored items were recoded, confirmatory factor analysis (CFA) was conducted using AMOS version 18.0, with the maximum likelihood method to validate the psychometric properties of the measurement model. As a result of low factor loading (less than .50), one item was deleted from each of the final MO, EC, and EA scales, and two items were eliminated from the final RG scale. After these deletions, the CFA results fitted well with the measurement model according to comparative fit index (CFI), incremental fit index (IFI), Tucker-Lewis index (TLI), and root mean square error of approximation

(RMSEA) as follows: $\chi^2(136) = 230.32$, $\chi^2/df = 1.694$, $p < .001$, RMSEA = .038, CFI = .986, IFI = .987, TLI = .975. The final model demonstrated satisfactory convergent validity, with average variance extracted (AVE) greater than .50 of total variance. The model was also reliable, as indicated by Cronbach's alpha. The construct reliability of all constructs exceeded .80 (see Table 1). The discriminant validity among constructs was assessed by comparing the arithmetic square roots of AVEs with the coefficients of correlations between constructs. As the arithmetic square roots of AVEs were greater than the correlation coefficients in all constructs, the assessment findings were supported (see Table 2).

Table 1. *Reliability and Convergent Validity Testing of Constructs*

Construct	Indicator	Factor loading	Reliability coefficient	Construct reliability	AVE
MO	MO1	.944	.891	.897	.689
	MO2	.887	.787		
	MO3	.707	.500		
	MO4	.759	.576		
CO	CO1	.809	.654	.845	.645
	CO2	.840	.706		
	CO3	.758	.575		
EC	EC1	.642	.412	.802	.506
	EC2	.654	.428		
	EC3	.696	.484		
	EC4	.836	.699		
EA	EA1	.806	.650	.856	.506
	EA2	.764	.584		
	EA3	.727	.529		
	EA4	.835	.697		
	EA6	.501	.251		
	EA7	.570	.325		
RG	RG1	.692	.479	.860	.608
	RG2	.880	.774		
	RG3	.805	.648		
	RG4	.729	.531		
PCI	PCI1	.849	.721	.878	.705
	PCI2	.856	.733		
	PCI3	.814	.663		
PCB	PCB1	.976	.953	.829	.627
	PCB2	.744	.554		
	PCB3	.611	.373		

Note. MO = man–nature orientation, CO = collectivism, EC = environmental cognition, EA = environmental affect, RG = reference groups, PCI = proenvironmental consumption intention, PCB = proenvironmental consumption behavior.

Table 2. *Discriminant Validity Testing of Constructs*

	<i>M</i>	<i>SD</i>	MO	CO	EC	EA	RG	PCI	PCB
MO	6.535	0.826	.830						
CO	5.684	1.048	.542	.803					
EC	2.558	1.048	-.016	.023	.711				
EA	5.725	1.007	.540	.437	.025	.711			
RG	5.716	1.191	.337	.281	.068	.361	.780		
PCI	5.720	1.307	.494	.442	.109	.562	.462	.840	
PCB	4.009	1.312	.017	.057	.241	.284	.196	.349	.792

Note. Numbers on the diagonal are arithmetic square roots of AVE for each construct. Numbers not on the diagonal are correlation coefficients between constructs.

Overall Model Fit and Hypotheses Testing

The goodness-of-fit values of the proposed model were: $\chi^2(397) = 737.12$, $\chi^2/df = 1.857$, $p < .001$, RMSEA = .046, CFI = .968, IFI = .968, TLI = .953. However, the corresponding p value was below the recommended level of .05. Given that the χ^2 statistic is highly sensitive to sample size, we also referred to other fit indices, such as RMSEA, CFI, IFI, and TLI. All these values met the threshold requirements, thereby indicating good model fit. The proposed model left only 4.6% of the variance unexplained.

The estimated standardized path coefficients of the constructs are shown in Figure 1. The mean scores of MO and CO were 6.535 and 5.684, respectively (see Table 2), indicating that the respondents exhibited Chinese cultural characteristics and that MO and CO significantly and positively influenced PCI. The standardized path coefficients were .201 and .165, respectively, and were significant at $p < .001$, thereby supporting Hypotheses 1 and 2. The respondents demonstrated very strong EA in response to environmental issues, although, according to their responses to the knowledge scale we used to measure their EC, they knew little about them. The mean scores for EC and EA were 2.558 and 5.752, respectively, (see Table 2), indicating that EC and EA significantly and positively affected PCI. The standardized path coefficients were .066 and .313, and were significant at $p < .05$ and $p < .001$, respectively), thus supporting Hypotheses 3 and 4. The mean of RG was 5.716 (see Table 2), suggesting that the respondents were strongly influenced by their RG. The RG construct significantly and positively influenced PCI (the standardized path coefficient was .27 and was significant at $p < .001$), thereby supporting Hypothesis 5. The mean scores of PCI and PCB were 5.720 and 4.009 (see Table 2), respectively. Furthermore, the results indicate that PCI is a significant predictor of PCB, in accordance with the theory of planned behavior (Ajzen & Fishbein, 1980), although overall PCI did not translate into PCB (the standardized path coefficient of PCI to PCB was .340 and was significant at $p < .001$), thus supporting Hypothesis 6.

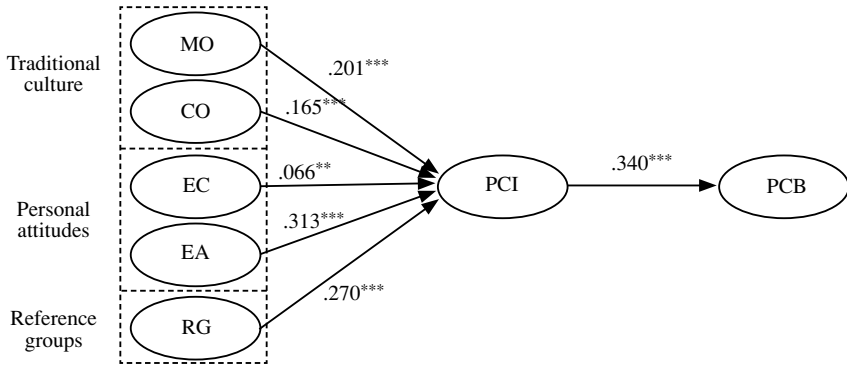


Figure 1. Overall fit of the proposed model and path analysis of the latent constructs.
Note. ** $p < .05$, *** $p < .001$.

Discussion

In this study we examined the influence of Chinese traditional culture, personal attitudes, and RG on the PCB of Chinese rural residents. We proposed a conceptual model, which was empirically verified by surveying a sample of Chinese rural residents in Jiangxi Province. The SEM results supported the hypothesized relationships in the proposed model. Specifically, Chinese traditional culture (MO and CO), personal attitudes (EC and EA), and RG had a significant positive effect on PCI. The significant positive effect of PCI on PCB was also confirmed.

Our results contribute both practically and theoretically to the understanding of the PCB of Chinese rural residents. The findings we have reported serve as a reminder to the Chinese government of the importance of preserving traditional culture among its residents during rapid industrialization. Although proenvironmental research is a Western ideology that has emerged over the past few decades, we have highlighted the similarity of this ideology with Chinese traditional culture in this study. On a practical level, the Chinese government can capitalize on traditional culture to enhance residents' proenvironmental consciousness through well-planned and informative education and public marketing. As a result, the country can achieve sustainable national development.

On a psychological level, our results suggest that EC and EA both positively affect PCI, with EA influencing PCI more strongly than did EC in this study. This result provides insight into the cognitive understanding of Chinese rural residents and determines how their emotional response to proenvironmental issues shapes their specific attitudes toward proenvironmental consumption.

Thus, these findings indicate to the Chinese government and proenvironmental marketers that affective appeals facilitate a PCI among Chinese rural residents more effectively than do cognitive appeals.

On a sociological level, our results demonstrate that RG significantly and positively influences the PCI of Chinese rural residents. The estimated standardized path coefficient value between these two constructs was much higher than those of MO, CO, and EC in relation to PCI. Therefore, Chinese policy makers and proenvironmental marketers should consider this influence and induce relevant PCB in RG (e.g., opinion leaders and social networks) by crafting policies and marketing strategies that will shape the PCB of Chinese rural residents.

Although PCI significantly and positively influenced PCB, nonetheless, intention did not translate effectively into corresponding behavior. The standardized path coefficient of the two variables of .34, was much lower than the mean correlation of .52 reported by Bamberg and Möser (2007) in their meta-analysis. The low correspondence between proenvironmental intention and actual consumption in our participants may be attributed to the relative unavailability of proenvironmental products in China. Nevertheless, proenvironmental versions of many consumer products are already sold in China, although they are not as widely available as in Western countries (Ye, 2000). In sum, although Chinese residents are unlikely to exhibit a degree of PCB similar to that of their Western counterparts, they can still express their environmental concern through the consumption of numerous available proenvironmental goods. However, Chan (1999) suggested that consumers' perception of the credibility of the environmental claims of proenvironmental products contributes strongly to the low correspondence between PCI and actual consumption.

Chinese residents also believe that the government, followed by corporations, should shoulder most of the responsibility for protecting the environment. Therefore, the Chinese government should improve its environmental education and publicity to effectively equip Chinese residents to distinguish between genuine and false proenvironmental claims. Marketers should also verify the design and content of their proenvironmental claims to cultivate proenvironmental behavior in Chinese residents.

On a theoretical level, we have provided empirical support for the theory of planned behavior (Ajzen & Fishbein, 1980). By merging cultural, psychological, and sociological variables into a single analytical framework, we have provided a useful insight into important antecedents of PCB in our model. These insights could act as a basis for further in-depth research on the proenvironmental behavioral process of Chinese residents.

We have several other suggestions for future research. First, researchers could examine the stronger effect on PCI by EA than by EC. Second, the low

degree of actual commitment of Chinese rural residents to proenvironmental consumption warrants further exploration. This low commitment may be connected to unobserved factors which were not investigated thoroughly in this study. Finally, our results are based on a sample of Chinese rural residents from Jiangxi Province, who cannot represent all Chinese rural residents. Therefore, further samples must be obtained from other rural areas to determine the PCB of the Chinese rural population as a whole.

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