

## Article

# Influence of Institutional Factors and Perception of Climate Change on Carbon Reduction Behavior in Taiwan Temples

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**Abstract:** In Asian countries where Buddhism and Taoism are mainstream religions, incense burning is a daily practice. Taiwan has the largest religious population in the world, and the ritual culture, especially in Minnan, hinders carbon reduction and impacts the environment negatively. In previous studies, the temple's carbon-reducing behaviors have not been dealt with seriously. Thus, we explored the relationship between the public and the temple's carbon-reducing behaviors under internal and external pressure using institutional theory to understand the public recognition of reducing the use of incense, gold paper burning, and firecrackers. We conducted an integrated analysis of the public's perception of climate change and carbon reduction behavior of temples using institutional theory, a strategy model. The results provide a basis for decision-making and suggestions for government agencies, academics, and companies in environmental protection and can be used to enhance the awareness of environmental protection caring for nature, and sustainable development in Taiwan.

**Keywords:** Institutional Theory, Perception of Climate Change, Response Strategies, Carbon Reduction Behavior

## 1. Introduction

As the global population continues to increase, and natural resources are exploited, the environment is becoming unbalanced, and natural disasters occur more often than before (Zur and Klockner, 2014; Morton, & Dessai, 2015; Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007). Thus, countries are becoming conscious of environmental issues and carbon reduction (Dewald et al., 2014). People are concerned about the quality of the environment and are willing to invest time (Han et al., 2009), money, and energy to mitigate environmental damages (Kim et al., 2015) to have positive effects on human lives. In Taiwan, the density of temples is the highest in the world. From busy cities to remote towns, it is not difficult to find a large number of temples, and incense burning, gold paper burning, and firecrackers in the temples. The deep-rooted beliefs of Chinese people encourage them to burn incense and gold paper for rituals, which has impacted the environment negatively.

Establishing an appropriate carbon reduction strategy, temples and manufacturers are encouraged to reduce carbon emissions. However, at the same time, people's actions are required to maintain environmental quality and sustainable social development (DiPietro et al., 2013). However, it is necessary to let the public know how to reduce carbon and behave. The behavior of the public is influenced by national policies (Barr and Gilg, 2006). Scholars have proposed Planned Behavior, Norm-Activation Theory (NAT), and Value-Belief-Norm Theory (VBT). In the Value-Belief-Norm Theory (Schwartz, 1977), individuals' choice to display pro-environmental behavior was explained (Yazdanpanah and Forouzani, 2015). Dono, Webb, and Richardson (2010) found that individuals' pro-environmental behavior is influenced by social approval or norms (Dono et al., 2010). In the Norm-activation model, moral norms are found to influence individuals' environmental behaviors (Schwartz, 1977).

Regarding carbon reduction, previous study results showed why and how people engaged in and were motivated for environmentally friendly actions (Sreen et al., 2018) using the behavioral planning theory. Individuals' environmental behaviors are influenced by internal moral pressures and response strategies (Zhao et al., 2016). The decision-making process of people to make environmentally friendly choices has not been much studied, and the concept of environmental carbon reduction behaviors still needs to be explored. Therefore, we investigated the performance of consumers in response to internal and external pressures that affect the carbon reduction behavior of the temple to establish coping strategies (faith orientation or emotional protection) using institutional theory (DiMaggio and Powell, 1983) and the development and validation of a climate change perceptions scale (Homburg and Stolberg, 2006).

## 2. Literature Review

### 2.1. Institution Theory

Institution theory was used to illustrate how external pressure affects the behavior of individuals toward environmental protection in this study. In general, institutional theory has three forms of assimilation mechanisms: Coercive, Normative, and Mimetic (DiMaggio and Powell, 1983). The institutional theory reflects human and intentional creation from the narrow definition of the rules of interpersonal interaction to the broader interpretation of society as a whole and the formation of customs and habits. Institutions formulate laws, examinations, statements, and political agendas. The purpose of environmental protection is to enhance the quality of the environment and other common interests. The common interests are the property and, in environmental protection, it is for the commitment and enjoyment as public property. Because of the common and non-exclusive characteristics of public property, it can be misused (Hopkins, 2001), which is the main cause of environmental deterioration. It is important to share resources effectively and implement related policies carefully (Ostrom, 1990). Institutions need to establish frameworks, laws, and regulations for resource use and control to provide resolution mechanisms for conflict and rule changes (Ostrom, 2010). Therefore, in system and regulation design, it is important to guide individuals to the behavior using government regulations and a low-cost and effective monitoring mechanism. Then, the people's commitment can be increased to environmental protection. In addition to government regulations, the establishment of low-cost and effective monitoring mechanisms is required for mutual reciprocity, trust, and reputation (Araral, 2009; Poteete and Ostrom, 2004). In this article, we explored the behavioral patterns of the public to the environment and developed the assimilation mechanism of institutional theory for Coercive, Normative, and Mimetic behaviors (DiMaggio and Powell, 1983).

Coercive isomorphism arises from the question of policy influence and legitimacy. Coercive isomorphism comes from institutional norms that have a statutory structure and influence the operation of organizations through a "coercive" mechanism. Because institutional norms have much power, the organizations to which they belong must comply with them. The state is the most representative enforcer, and its rules and regulations are essential to the operation of organizations. The state's coercive pressure often imposes mandatory standards, monitoring, and penalties on the public for actions. To maintain ecological protection and sustainable development, countries have developed standards and regulations to implement environmental protection practices (DiMaggio and Powell, 1983). In the aforementioned cases, individuals or organizations must comply with the legality of the system. For example, government agencies require vehicles to meet carbon emission standards and set "air pollutant emission standards for transportation" that are subject to administrative fines if they are exceeded.

Not all environmental protection behaviors are regulated by regulations. When faced with uncertainty, people tend to imitate others who are more stable or perform well in the environment. This mimicry is a quick way to grasp the uncertainty in the environment and adapt to the environment as early as possible. Imitating the environmental behavior of others is an important motivator that has a significant impact, such as reducing waste and increasing recycling rates, which influences others to follow suit. In addition to "coercion" and "mimetic", another important driver is the institutional theory of "normative isomorphism", which is a moral principle in society that exerts psychological pressure on individuals to follow. Thus, when people operate or make economic transactions, they consider the benefits and convenience and weigh the decisions and actions that individuals make in light of their role in society's expectations. The ethical principles of society reinforce the individual's responsibility for environmental behavior (Hill et al., 1977). It is a social responsibility in moral norms that do not originate from the need to conform to laws or imitate adaptation to the environment in contrast to the two mechanisms described above. Normative isomorphism is often based on strong values and the choice to act in an ecologically responsible manner, rather than imitating the actions of others or complying with laws.

### 2.2. Coping Strategy

The coping strategy of the public to the carbon reduction behavior of the temple is related to the degree of response to the situation and pressure, according to the personal interaction with the environment to reduce the generation of negative perceptions. The coping strategy (response strategy) consists of three elements (Homburg and Stolberg, 2006).

1. Faith-oriented strategies, in which consumers (people) identify with religious patterns and spirituality, e.g., by using broad doctrinal interpretations for problem-solving, seeking stress relief, or engaging in related ritual activities to achieve religious support (Susskind et al., 2014).

2. Expressive coping strategies: Emotional expressions are used to reduce internal stress (Miller et al., 1989). In addition to faith-based coping strategies, they also use venting to cope with stress (Homburg and Stolberg, 2006) and seek support from their surroundings (Compas et al., 1988). Emotion-oriented strategies are a key factor in coping strategies (Grob, 1995).

3. Self-protection strategies: Environmental strategies to protect health in the face of threats (Homburg and Stolberg, 2006),

such as caring for health conditions, consuming nutrition, and exercising to maintain a healthy lifestyle, are expected to increase life expectancy (Harrington et al., 2010).

The "coping strategies" in this study refer to the cognitive, emotional, and behavioral efforts made by individuals when they encounter disturbing or stressful events related to environmental protection. The strategies include seeking solutions to problems, seeking support from the community, and self-adjusting emotional and behavioral changes. In the context of consumer behavioral response, response strategies are considered as ideas and intentions to deal with problems when individuals are faced with environmental stresses through cognition, effort, finding resources, sharing, and surrounding assistance to deal with problems and resolve conflicts, and eliminate stress (Lazarus, 1991). Reactive strategies can also increase an individual's level of control over situations and stressors and obtain feedback (Lantermann et al., 1992). Scholars have suggested that coping strategies mediate between motivational and environmental behaviors while individuals adopt environmentally protective behaviors in response to assessments (Homburg and Stolberg, 2006). It has also been argued that coping strategies are determinants of environmental protection behaviors (Homburg and Stolberg, 2006; Iwata, 2002; Kannapin et al., 1998). Environmental protection behavior is taken for the reduction or resolution of environmental pollution or overconsumption of resources and ecological damage. Corral-Verdugo (2002) stated that coping strategies are the key to understanding environmental behaviors, and only after having the ability of relevant knowledge and strategies, environmental issues can be understood for concrete actions (Corral-Verdugo, 2002). In line with the aforementioned arguments, we proposed the following hypotheses.

1. Hypothesis 1: Coercive pressures are positively associated with consumer coping strategies.
  - Hypothesis 1-1: Coercive pressures are positively associated with the consumer's faith-oriented strategy.
  - Hypothesis 1-2: Coercive pressures are positively associated with consumers' emotional protection strategy.
2. Hypothesis 2: Normative pressures are positively associated with consumer coping strategies.
  - Hypothesis 2-1: Normative pressures are positively associated with the consumer's faith-oriented strategy.
  - Hypothesis 2-2: Normative pressures are positively associated with the consumer's emotional protection strategy.
3. Hypothesis 3: Mimetic pressures are positively associated with consumer coping strategies.
  - Hypothesis 3-1: Mimetic pressures are positively associated with consumers' faith-oriented strategies.
  - Hypothesis 3-2: Mimetic pressures are positively associated with consumers' emotional protection strategy.

### 2.3. Perception of Climate Change

Hines, Hungerfor, and Tomera (1987) argued that the ultimate goal of environmental education is to develop citizens who are actively involved in solving environmental problems. Kollmuss and Agyeman (2002) stated that pro-environmental behavior is the behavior of people who intuitively seek out the least negative impact of nature and the human-made environment and practice it in their lives. (Tindall et al., 2003). These behaviors originate from the awareness of climate change and the possibility of environmental imbalance due to overexploitation and misuse of resources by humans. Actions to improve, enhance, or maintain the quality of the environment help to achieve sustainable social development (Bamberg and Agyeman, 2002). Fujii (2006) argued that pro-environmental behavior is a frugal behavior. Under the norm-activation model, morality can be used to regulate individuals' environmental protection behaviors (Schwartz, 1977). Environmental behaviors include energy saving and carbon reduction (Monroe, 2003), resource recycling (Schultz et al., 1995; Vining and Ebreo, 1990), transportation use (Van Lange et al., 1998), and pro-environmental buying (Vining and Ebreo, 1990; Thøgersen, 1999), reducing household waste (Gatersleben et al., 2002), and saving energy at home (Poortinga et al., 2004). Thus, personal purchasing behavior, recycling, and active participation are environmental protection behaviors (Snelgar, 2006).

Therefore, people make environmentally friendly choices based on their awareness, values, attitudes, and issues, and take concrete actions to support environmental conservation and demonstrate friendly and responsible attitudes. (Steg et al., 2005). Based on such study results, we analyzed the pro-environmental behavior advocated by Stern et al. (1999) and Dono et al. (2010) in three dimensions: consumer behavior, willingness to sacrifice, and environmental citizenship (Dono et al., 2010; Stern et al., 1999). Therefore, the following hypotheses were proposed.

- (4) Hypothesis 4: Consumers' perceptions of climate change are positively associated with their coping strategy.
  - Hypothesis 4-1: Consumers' perceptions of climate change are positively associated with faith-oriented strategies.
  - Hypothesis 4-2: Consumers' perceptions of climate change are positively associated with emotional protection strategies.

### 2.4. Consumption Behavior for Carbon Reduction

According to the deep-rooted beliefs and opinions of the public, it is difficult to promote reducing incense, gold paper, and firecrackers burning in Chinese society. Such a tradition has lasted for thousands of years. The vital, cultural, and psychological aspects of healing and comforting and other significance with faith and respect and no dare of offending the ghosts and gods are too

strong for people to change the tradition. Moreover, the production and sale of gold and silver paper money and incense sticks involve job opportunities, as well as the interests of temples and industries. When promoting the strategy of "carbon-reducing consumption behavior in temples", such issues must be considered to prevent any resistance from people. However, with the increase in environmental awareness, such traditional concepts seem to have decreased. In the Xingtian Temple, gold paper and incense burning have been prohibited, which does not affect the operation and the faith of the public. Thus, the following hypotheses were proposed.

- (5) Hypothesis 5: Consumers' faith is positively associated with carbon-reducing consumption behavior.
- (6) Hypothesis 6: Consumers' emotional protection is positively associated with carbon reduction consumption behavior.

### 3. Research Methodology

#### 3.1. Research Framework

The structure of this study was established based on a literature review as shown in Fig. 1 with the proposed research hypotheses. Using the institutional theory, we analyzed the relationship between external pressure (coercion, regulation, and imitation), the internal psychological level (awareness of climate change), and the carbon reduction behavior of temples. The difference between internal and external pressures was explained using the institutional theory of coercion, imitation, regulation, and awareness of climate change. The response strategies were adopted to understand how different pressures affected the implementation of the carbon reduction behavior of the temple and investigate whether the public's response strategies to protect the environment positively affected the performance of the carbon reduction behavior of the temples. Structural Equation Modeling (SEM) was used to validate the study structure and concepts with multiple measurement variables.

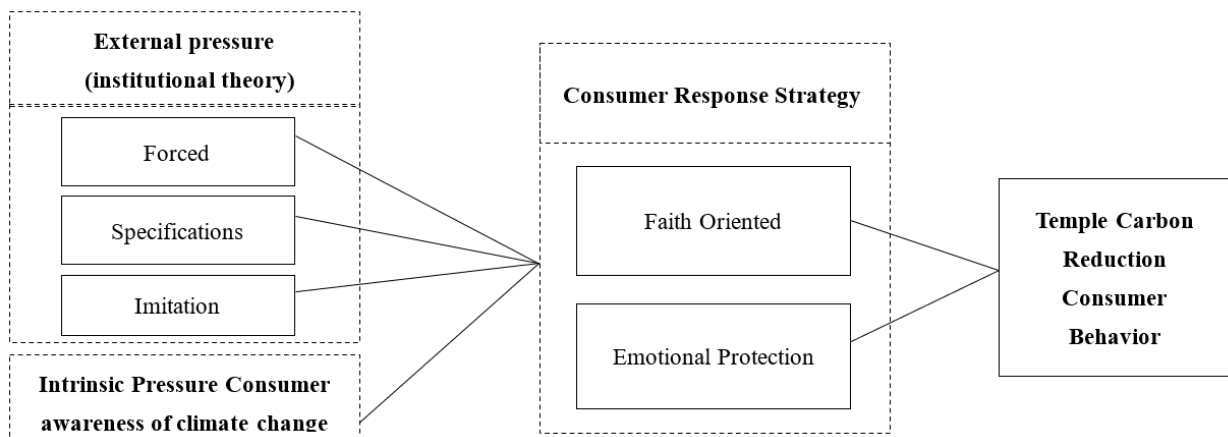


Figure 1. Research framework.

#### 3.2. Research Variables

The variables used in the study questionnaire were scored on a seven-point Likert scale, ranging from 1 for the "strongly disagree" option to 7 for the "strongly agree" option, with higher scores indicating greater agreement with the content status of the questionnaire design.

##### 3.2.1. Institutional Theory

The institutional theory proposed by DiMaggio and Powell (1983) was used in this study in assimilation mechanisms such as Coercive, Normative, and Mimetic (Table 1).

**Table 1.** Operational definition of Institutional isomorphism.

Variable	Operational Definition
Coercive pressure	The legal structure of the institution is designed to comply with the rules and regulations of the law. For example, mandatory standards, such as monitoring and penalties. Therefore, in order to comply with the regulations, an individual has to restrict his or her behavior strategy to comply with the regulations.
Mimetic pressure	Rapid adaptation practices used by individuals to manage the uncertainty around them. For example, when faced with extreme environmental uncertainty, the individual will most likely prioritize activities that mimic those of other more stable or high-performing members.
Normative pressure	Moral and intrinsic obligations based on social beliefs. Even when personal attitudes are at odds with generally accepted social norms, people seek social support for personal behavior; thus, general social norms influence personal behavior change (Hill et al., 1977). This is social responsibility in terms of ethical norms, choosing to act spontaneously in response to environmental responsibility, rather than merely imitating the actions of others or complying with legal regulations.

### 3.2.2. Coping Strategy

In terms of behavior for environmental protection, the coping strategy was used as illustrated in Table 2 (Homburg and Stolberg, 2006; Sussking et al., 2014).

**Table 2.** Definition of coping strategy.

Variable	Operational Definition
Faith-Oriented Coping Strategies	Consumers (people) identify with religious patterns and spirituality, e.g., by using broad doctrinal interpretations for problem-solving, seeking stress relief, or engaging in related ritual activities to achieve religious support (Susskind et al., 2014).
Emotionally Oriented Coping Strategies	Emotional expressions are used to reduce internal stress (Miller et al., 1989). In addition to faith-oriented coping strategies, they also use venting to cope with stress (Homburg and Stolberg, 2006) and to seek support from their surroundings (Compas et al., 1988). Research has shown that emotion-oriented strategies are a key factor in coping strategies (Grob, 1995).
Self-protection Coping strategies	Environmental strategies to protect health in the face of threats (Homburg and Stolberg, 2006), such as caring for health conditions, consuming nutrition, and exercising to maintain a healthy lifestyle, are expected to increase life expectancy (Harrington et al., 2010).

### 3.2.3. Perception of Climate Change

A questionnaire was designed to identify the elements for assessment (Boateng, Neilands, Frongillo, Melgar-Quinonez, & Young, 2018; Bostrom et al., 2012; Guy, Kashima, Walker, & O'Neill, 2014; Heath & Gifford, 2006; Poortinga, Whitmarsh, Steg, Böhmer, & Fisher, 2019) (Table 3).

**Table 3.** Operational definitions of climatic changes.

Variable	Operational Definition
The belief in the reality of climate change	The extent to which people believe that climate change is occurring. The Neogene Pattern (NEP) reflects public perceptions of human-environmental relationships, including perceived vulnerability of nature and vulnerability to human impacts (Dunlap, Van Liere, Mertig, & Jones, 2000). The more people agree with the NEP, the more they agree that nature is negatively affected by humans and that humans do not have the right to dominate the natural world (Dunlap et al., 2000). The more strongly people support the NEP, the more they believe that climate change is real, that it is human-caused, and that negative impacts have occurred (Brenkert-Smith, Meldrum, & Champ, 2015; O'Connor, Bard, & Fisher, 1999)
Causes of Climate Change	The extent to which people attribute climate change is human-induced. Perceptions of climate change and negative perceptions of climate change affect people's emotions, such for example, worry, concern, or fear (van derLinden, 2017). Scholars have studied that the more people can agree that climate change is human-caused and that negative effects are occurring around them, the stronger the negative emotions become (Berry & Co. Peel, 2015; Kittipongvises & Mino, 2013).
Consequences of Climate Change	The public perceives the consequences of climate change as either negative or positive. The perceived risk of climate change and the perceived consequences of climate change relocation are related to the value implications for specific domains. Research indicates that people perceive more risks from climate change and perceive the reality of climate change as having negative consequences in their surroundings (Li, Juha'sz-Horva'th, arrison, Pint'er, & Rounsevell, 2017; Safi, Smith, & Liu, 2012).



**Table 3. cont.**

Spatial distance of perception of climate change	Do people think the consequences of climate change are happening around them or far away?
Time distance of perception of climatic changes	Do people think the consequences of climate change will happen soon or in the distant future?

### 3.2.4. Behavior for Carbon Reduction

The concept of Stern et al. (1999) and Dono et al. (2010) was used as the basis to assess the behavior of the temple for carbon reduction. The perception of the carbon reduction of the temple included consumer behavior, willingness to sacrifice, and citizenship. Table 4 illustrates the perception of the temple for carbon reduction (Table 4).

**Table 4.** Operational definition of behavior for Carbon reduction of temples.

Variable	Operational Definition
Consumer Behavior	Consumers consider the impact on the ecological environment when purchasing ritual products, and choose things that are less harmful or even beneficial to the environment.
Sacrifice Wishes	People sacrifice their needs to reduce environmental pollution, such as reducing incense burning or being willing to pay higher fees for environmental tributes and replacing them with recycled products.
Citizen Behavior	This refers to a model of voluntary social behavior in which people not only practice environmental protection activities themselves, but also express their views and suggestions on environmental issues, support environmental policies through democratic means or donate money, ask for government support to solve environmental problems, and act to support environmental groups.

### 3.3. Data Collection

The questionnaire was designed by referring to the concepts and questions in the literature. To prevent the questionnaire from showing unclear semantic expressions and misunderstanding of the respondents, the questionnaire was validated through the pretest. The first draft of the questionnaire was reviewed by experts and modified with their correction suggestions. The questionnaire was tested for content validity. 350 questionnaires were distributed to the Line and FB communication groups and people in the surrounding areas of temples from June 1, 2022, to June 30, 2022. 223 valid questionnaires without repetition, items unanswered, same scores checked in the questionnaire were received with a response rate of 63.7%.

## 4. Results and Discussion

### 4.1 Profile of Respondent

The respondents included 157 males (70.4%) and 66 females (29.6%). 117 (52.5%) respondents were 41–50 years old, and 62 (27.8%) were 31–40 years old. Their religions included Taoism (107, 48.9%) and Buddhism (66, 30.1%). Secondly, Cronbach's alpha coefficient was used to measure reliability. Cronbach alpha was determined to test the reliability of the questionnaire survey. The value was higher than 0.60 indicating high reliability (Nummally, 1978) (Table 5).

### 4.2 Confirmatory Factor Analysis

SPSS20 and AMOS20 were used for statistical analyses According to the recommendation of Hair et al. (2009), the sample size in multivariate studies should be larger than 300 for less than seven sections and 500 for more than seven sections (Hair et al., 2009). In this study, the valid sample size was 223 (Sudman, 1974). Confirmatory Factor Analysis (CFA) was conducted to examine the hypothetical relationship between the measured variables and the underlying constructs for structural equation modeling. The ratio of  $\chi^2$  to its degrees of freedom was 1.79 with a p-value of 0.00, indicating that this study used an acceptable model. In addition to the  $\chi^2$  validation, we measured the model fitness indicators institutional theory GFI = 0.979, AGFI = 0.956, RMSEA = 0.028; response strategy GFI = 0.938, AGFI = 0.883, RMSEA = 0.091; climate change awareness GFI = 0.916, AGFI = 0.872, RMSEA = 0.066; temple carbon reduction behavior GFI = 0.914, AGFI = 0.839, RMSEA = 0.116 all have roughly good model fit (Hair et al., 1995).

### 4.3. Reliability

Table 5 shows the reliability of the estimated parameters as the pertaining values were greater than 0.50. The standardized factor loadings ranged from 0.87 to 0.740. The recommended values were 0.5 and 0.950. Thus, the reliability of the analyses in this

study was validated.

**Table 5.** Reliability, weighting values, factor loadings, and AVE values.

	Construct	Loading	AVE	Measurement model suitability index	Cronbachs Alpha
System Theory	coercive	0.882	0.743	GFI = 0.979 AGFI = 0.956 RMSEA = 0.028	0.770
		0.828			
		0.774			
	normative	0.937	0.817		
		0.943			
		0.505			
mimetic	0.543	0.940	0.623		
	0.834				
	0.858				
Response Strategy	Faith Oriented	0.625	0.519	GFI = 0.938 AGFI = 0.883 RMSEA = 0.091	0.605
		0.752			
		0.775			
	Emotional Protection	0.761	0.590		0.879
		0.748			
		0.737			
Awareness of Climate Change	Confirmation of the occurrence	0.909	0.700	GFI = 0.916 AGFI = 0.872 RMSEA = 0.066	0.876
		0.878			
		0.587			
	Reasons for occurrence	0.882			
		0.883			
		0.792			
Consequences	0.912				
	0.858				
	0.825				
Occurrence of Space Distance	0.927				
	0.890				
	0.720				
Occurrence Time Distance	0.896				
	0.863				
	0.638				
Temple Carbon Reduction Behavior	Consumer Behavior	0.783	0.543	GFI = 0.914 AGFI = 0.839 RMSEA = 0.116	0.882
		0.724			
		0.710			
	Sacrifice Wishes	0.926			
		0.902			
		0.837			
Citizen Behavior	0.928				
	0.924				
	0.574				

The validity of the discrimination analysis was determined using the degree of discrimination between the measurement variables for the different constructs. The square root of the average explained variance was larger than the correlation coefficient between the two factors as shown in Table 5. The loading of each factor in the cross-loading matrix was higher. Therefore, the model was validated for the discrimination analysis (Fornell and Larcker, 1981).

**Table 6.** Correlation matrix of the potential surface of measurement model.

	1	2	3	4	5	6	7
Mandatory	0.862						
Imitation	0.198	0.904					
Specifications	-0.129	0.172	0.940				
Beliefs	0.136	0.171	0.159	0.728			

Table 6. cont.

Emotional Protection	0.056	0.191	0.427	0.440	0.768		
Awareness of Climate Change	-0.048	0.062	0.382	0.202	0.235	0.837	
Carbon Reduction Behavior	-0.013	0.246	0.469	0.494	0.366	0.437	0.736

Note: The non-diagonal part is the value of the correlation coefficient of each potential surface; the diagonal is the square root of AVE.

4.4. Hypothesis Test

"Mandatory" did not affect the relationship between the response strategies of temple consumption behavior, which rejected Hypothesis 1. "Normative" influenced the response strategies of temple consumption behavior, which supported Hypothesis 2. "Imitation" affected the behavioral response strategies of temple consumers supporting Hypothesis 3. Consumers' perceptions of climate change and their response strategy were found, supporting Hypothesis 4. Consumers' beliefs affected the carbon reduction behavior of the temple, and Hypothesis 5 was supported. Consumer sentiment protection affected the carbon reduction behavior of the temple, and Hypothesis 6 was supported.

The structural model fit result showed that  $\chi^2 = 64.238$ ;  $\chi^2/df = 16.060$  ( $df = 4$ );  $GFI = 0.932$ ;  $RMSEA = 0.263$ , showing a significant fit. The path diagrams (Fig. 2) presented the direct effect of the model with a total of 10 sets of variables at significant levels ( $p < 0.05$ ). The imitation and regulation of external pressure affected "belief-oriented" and "emotional protection" response strategies positively, representing that people had less direct feelings towards government regulation, while on the other hand, the moral opinion of society and others' perceptions affected individuals' response positively to carbon reduction strategies towards temple consumption. The higher the score of awareness of climate change, the higher the score of the carbon reduction response strategy, which showed the effectiveness of actions and common goals (Ostrom, 1990). The analysis results also showed that the scores of faith-oriented and emotional protection response strategies were high as effective carbon reduction behavior for burning at the temple.

4.5. Mediation Effect of Coping Strategy

A four-step process was used to measure the mediating effect of people's response strategies in carbon reduction and confirm whether the response strategies mediated internal and external pressure on the carbon reduction behavior (Baron and Kenny, 1986). The mediating effect analysis result is shown in Table 7. The results did not have a significant impact of mediating effects on the carbon reduction behavior of the temple. Such results showed the individual response strategy in the imitation, norms, and climate change cognition on carbon reduction behavior. A significant relationship between the respective variables (imitation, normative, and climate change cognition) and carbon reduction behavior was not significant due to the response strategy which showed a partial mediating effect.

Table 7. Analysis of mediating effects.

Coefficient in Regressions			IV+M->DV				
Self-variable IV	Intermediary Variables M	Depending on the variable DV	IV->M	M->DV	IV->DV(T)	IV->DV(D)	Agency Effect
Forced	Faith Oriented	Carbon Reduction Behavior	0.0990*	0.4177***	-0.0168	-0.0582	No Agency
Specifications	Faith Oriented	Carbon Reduction Behavior	0.1591***	0.3577***	0.403***	0.3466***	Partial Agency
imitation	Faith Oriented	Carbon Reduction Behavior	0.1746***	0.3807**	0.2031**	0.1366***	Partial Agency
Awareness of Climate Change	Faith Oriented	Carbon Reduction Behavior	0.3073***	0.3511**	0.5674***	0.4596***	Partial Agency
Forced	Emotional Protection	Carbon Reduction Behavior	0.0486	0.2941**	-0.0168	-0.0311	No Agency
Specifications	Emotional Protection	Carbon Reduction Behavior	0.4795***	0.1661***	0.4035***	0.3239***	Partial Agency



Table 7. cont.

imitation	Emotional Protection	Carbon Reduction Behavior	0.1922***	0.2621***	0.2031***	0.1527***	Partial Agency
Awareness of Climate Change	Emotional Protection	Carbon Reduction Behavior	0.3985***	0.2237***	0.5674***	0.4783***	Partial Agency

\*\*\*p<.01, \*\*p<.05, \*p<.1

## 5. Conclusion

Scholars have studied the consciousness behavior of carbon reduction but have seldom explored the mutual influence of institutional pressure, awareness of climate change, response strategies, and carbon reduction behavior. In this study, those factors were explained by institutional theory. The institutional theory was used to illustrate the external and internal pressures. The statistical analysis results showed that imitation, regulation, and awareness of climate change influenced people to adopt positive response strategies (belief orientation, emotional protection), and the response strategies impacted people's responses to temple consumption to reduce carbon emissions significantly. The results were consistent with those of Araral (2009) and Poteete and Ostrom (2004) which showed that individuals' environmental protection behaviors were influenced by social morality (Zhao et al., 2016). In addition to laws and regulations, an effective mutual monitoring mechanism and the motivation of people help share resources effectively without government regulation or privatization, while ensuring the public welfare of environmental protection (Araral, 2009; Poteete and Ostrom, 2004). Mandatory regulations had no direct effect on people's ability to adopt carbon reduction strategies, suggesting that most people did not have their desire to reduce carbon consumption because of government regulations.

To the carbon reduction of the temples, people responded positively which influenced their consumption behavior, willingness to sacrifice, and civic behavior for the environment. Individuals were under internal and external pressure to deal with the problem through awareness, effort, seeking resources, sharing, and assistance from others, and realizing their environmental protection behavior (Homburg and Stolberg, 2006). The environmental protection behavior was motivated by the pressure to recognize, seek resources, share, and help from others.

Due to climate change and energy depletion, environmental protection behavior has become important. When people realize that the ecological environment is a serious problem, they feel the need to modify their behavior to protect the environment (Han et al., 2010). Therefore, the individual's response strategy can be enhanced by continuous exposure to various knowledge about the environment (Corral-Verdugo, 2002). The higher scores on the Response Strategies Scale in this study responded to the use of adaptive environmental behavioral and related response strategies (Homburg et al., 2007). The mediating effect was also found to be partially mediated by people's response strategies in nine relationships: imitation, regulation, perception of climate change on consumption behavior, willingness to sacrifice, and civic behavior. The response strategies enhanced the effectiveness of the carbon reduction behavior of the temples under relevant pressure. There might be an unmediated effect of response strategies on mandatory carbon reduction behaviors, which requires subsequent studies.

The ethical norms of the society strengthened the individual behavior to take responsibility for environmental protection and carbon reduction (Hill et al., 1977). Therefore, students need to be educated to be responsible for the environment and to become "responsible citizens" (Erickson, E. and Erickson, 2006). In this study, people's response strategies influenced consumption performance, willingness to sacrifice, and civic behavior in favor of carbon reduction of the temples, suggesting the influence of personal response strategies and carbon reduction behavior with alleviated relevant environmental pressure (Poteete and Ostrom, 2004). In the past, there was no incentive for carbon reduction behavior, and there were disagreements with the "user fee" for waste disposal, refusal to pay pollution fines, and resistance to the construction of garbage dumps and incinerators. Therefore, the government needs to educate people. In addition to informing the objectives and values of various policies through written documents, the government must create environmentally literate citizens who actively participate in solving environmental problems through channels of public participation such as face-to-face public hearings (Hines et al., 1987). Through in-depth analysis and reporting of successful cases in schools, social education institutions, and media texts and images, the awareness of carbon reduction, political democracy, the improvement of environmental protection laws, and the implementation of local self-governance can be achieved. More people need to have carbon reduction behavior according to the response strategy. Doing this, social recognition or regulation affects the personal environmental protection and carbon reduction behavior (Dono et al., 2010). The results of this study can be used to make suggestions for the government or schools to promote environmental protection and carbon reduction policies. Enterprises must adopt green renewable energy and encourage consumers to purchase green products for the sustainable development of the environment and ecology.

There are research limitations to be considered. Due to the limitation of time and resources, the public was included as

consumers in this study. However, "temples" and "product suppliers (Buddhist stores)" need to be included to complete the study results and expand the scope of the research. The response strategy in the unmediated effect on carbon reduction behavior must be considered in the model, and individual concepts on carbon reduction behaviors need to be explored for further review and verification.

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