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Understanding Taiwanese undergraduate students' pro-environmental behavioral intention towards green products in the fight against climate change



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ABSTRACT

In recent years, media reports and the increased visibility of international environmental protection groups have exposed many individuals to the issue of global climate change. The present study investigated, from the perspective of environmental sustainability, Taiwanese university students' purchase intentions and loyalty toward green products. A survey was administered to students in eight universities who had received 8 h of climate change education, generating a total of 1586 valid respondents. Results of structural equation modeling showed that individuals must have environmental ethics before they can become aware of their social and self-responsibility to the environment, which then increases their green product purchase intentions and consumer loyalty. This study identified the relationships between the environmental responsibility chain (environmental ethics, social responsibility, and self-responsibility), beliefs in climate change, purchase intention, and consumer loyalty toward green products. The effectiveness of adaptation strategies that reduce the psychological distance of climate change requires consideration of both temporal and spatial distances. Self-responsibility fully mediates the relationships between environmental ethics and purchase intentions and consumer loyalty, which demonstrates the importance of using more environmentally responsible strategies to promote pro-environmental behavior.

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1. Introduction

Global climate change poses a fundamental risk to the planet and its inhabitants. This complex environmental issue has seriously affected the natural environment and has caused severe problems for conventional environmental governance and regional planning practices (WHO, 2008). Under these worsening conditions, it is imperative to strengthen the environmental ethics of every individual and induce behaviors that are more pro-environmental by exploring how altering consumption patterns (i.e. adaptive behaviors to climate change) translates into purchasing environmentally friendly goods. Ultimately, priority should be given to the provision of an effective green education to citizens that promotes

pro-environmental behaviors, develops environmental consciousness, and instills knowledge and skills that affect life outlook, behavior, and lifestyle (Milfont, 2012). Some researchers (Gifford and Nilsson, 2014; Thøgersen, 2005; Thøgersen and Crompton, 2009) have argued that an environmentally responsible lifestyle should reflect an individual's awareness and admiration of natural and cultural environments, their knowledge of nature and ecology, and their insight into environmental issues. Thus, individuals should exercise their freedom of choice to mitigate the gap between concern for the environment and willingness to act on those concerns, and they should recognize their responsibility to the future of the planet.

Case studies of recycling, supply and demand, pricing, and policy incentives, have shown that pro-environmental, or "green," consumers have the following qualities: (1) they conform to eco—friendly principles and habits, (2) they influence others through messages or personal examples, and (3) they avoid buying

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products that are harmful to their personal health and environmental sustainability, such as using energy-intensive non-decomposable plastic bags (Steg and Vlek, 2009; Akehurst et al., 2012). The implication is that environmental ethics have a considerable effect on consumers' purchase intentions and can reduce excessive consumption, which in turn influences the behaviors of others who might switch to consuming green products. Eventually, the overall environment can be ameliorated (Kong and Zhang, 2013; Hobson, 2013).

This study established and evaluated a behavioral model to investigate adaptive behaviors toward fighting global climate change. The model incorporated adaptation strategies of psychological distance. The findings can offer educators and sustainable development policy-makers greater insight into the proenvironmental behaviors of students receiving education on green issues. The present study scope was confined to the island of Taiwan, which has a high population density and a fragile environment. The government and local corporations have promoted green products through legal and commercial incentives for many years, but over this time the island's carbon footprint has not decreased. Previous studies on pro-environmental behaviors have primarily focused on advanced Western countries (Bleda and Valente, 2009; White et al., 2012), so the present study's Asian context expands current understanding. Overall, this study motivated by the following questions:

Research Question 1: What are the dimensions of environmental responsibility that cause pro-environmental behavior intentions and loyalty to green products?

Research Question 2: What psychological distance is related to each dimension of environmental responsibility?

To answer these research questions, the authors used psychological distance and environmental responsibility foundational theories. The combination views an environmental responsibility chain as the core component of the pro-environmental behavior process. In other words, the environmental responsibility chain is an environmental adaptation strategy and psychological response by the actor. In addition, the authors also examined the mediating roles of the environmental responsibility chain with psychological distance and behavior. The results of this study provide valuable information that may have implications for environmental educators, producers of green products and services, and green consumers.

2. Literature review

2.1. Psychological distance of climate change

According to construal level theory (CLT), psychological distance has four dimensions (Trope and Liberman, 2003: Trope et al., 2007: Liberman et al., 2007)—spatial, temporal, social, and hypothetical. Each dimension has different connotations and influences. The degree of abstractness (construal level) is determined by direct personal experience, and then manifests itself as a large or small psychological distance. Because individuals perceive climate change as an abstract and subjective topic, people perceive a large psychological distance with the topic. In fact, a large psychological distance has been recognized as one of the primary reasons people refuse to follow strategies that alleviate climate change (McDonald et al., 2015). Because most people have a large psychological distance with the issue (Trope and Liberman, 2010; Bar-Anan et al., 2006), an effective method to stimulate change might be by urging individuals to attend to a single, distant stimuli (e.g., to induce large social, temporal, or hypothetical distances; Bar-Anan et al., 2007), which could effectively change opinions on environmental issues and reduce the gap between environmental impact and personal interest (Liberman et al., 2007). For issues with a small psychological distance, attention should be focused on practical details concerning how the environment can be improved (Trope et al., 2007).

Spence et al. (2012) used CLT to measure UK consumers' psychological distance and willingness to use eco-friendly energy in relation to climate change: consumers that perceived a small psychological distance to the issue showed a high degree of environmental concern and willingness to save energy. Furthermore, Spence et al. found psychological distance had a significant negative correlation with willingness to save energy, and social distance had the most significant effect among the four dimensions. Arnocky et al. (2007) used self-construal levels to verify the impact of individual differences on environmental concerns, resource sharing, and pro-environmental behaviors. They found that CLT could predict egocentric environmental issues and resource sharing behaviors, whereas self-construal levels alone could predict behaviors regarding environmental issues, eco-cooperation, and environmental protection (Spence and Pidgeon, 2010). Spence et al. (2011) reported that an individual's psychological distance regarding climate change and the actions they take to mitigate it are significantly correlated. Because psychological distance is related to feelings toward and awareness of climate change, it is a predictor of the strategies people take to address their own responsibility (Liberman et al., 2007; Lorenzoni et al., 2007). Addressing temporal psychological distance to climate change is crucial if future environmental disasters are to be prevented. Using economic analysis to calculate discounted payoffs by trading off future costs and benefits may result in taking greater risks to estimate even more distant temporal conditions (Trope et al., 2007). According to previous empirical studies, differences in social distance are manifested during the transition from self-identity to group identity, with individuals able to convey their concerns on climate change through the mass media and other channels, urging their group to work toward a common goal (Spence and Pidgeon, 2010).

2.2. Environmental responsibility chain

Consumers demand high-quality products at low prices, but they prefer eco-friendly products and socially reputed brands when evaluating similar products. In the last two decades, consumers' environmental ethics have advanced considerably. Ethical purchasing is seen as an expression of an individual's moral judgment (Eckhardt et al., 2010; Vitell, 2015; White et al., 2012). The consumer side of ethics research includes environmental ethics, individual's self-responsibility, and social responsibility (Haytko and Matulich, 2009; Olsen et al., 2014; Singal, 2014; Van Doorn and Verhoef, 2011). Based on environmental altruism, selfresponsibility constitutes the intrinsic advantages of a green product's consumption. Social responsibility is the extrinsic advantage of adherence to social norms. For instance, if a consumer must pay more for a self or socially-responsible product, this is likely to be seen as an egoistic, self-interested, or additional environmental benefit by most consumers. Based on prior research, the current authors proposed a novel notion: the environmental responsibility chain is the environmental moral principle and self or socially-responsible standards that guide the behaviors of individuals as they obtain, use, and dispose of merchandise and services.

An individual's sense of ethical responsibility can be either selfimposed or a result of social expectations. These expectations have led to environmental certification schemes, such as green marks that highlight a product's low pollution, resource-savings, and recyclability throughout the product lifecycle. When choosing green products, consumers are becoming more inclined to pick a

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