



# Media use, environmental beliefs, self-efficacy, and pro-environmental behavior<sup>☆</sup>



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## ABSTRACT

Global warming poses a major challenge to humankind. To mitigate this phenomenon, identifying factors affecting individuals' pro-environmental behavior is critical. This study uses a synthetic model to examine the effects of global warming media use on environmental actions. The results from a national survey in Taiwan demonstrate that individuals rely on the media (television, newspapers and the Internet) to acquire information about global warming. Individuals' exposure and attention to global warming media coverage have positive direct effects on three types of pro-environmental behavior, including accommodating, promotional and proactive behavior. Environmental beliefs and self-efficacy also have indirect effects on all types of environmental behavior through media use. These findings reveal the vital function of global warming media use on people's environmental behavior. Governments and organizations can use the media as promotional tools and actively market mitigation policies and efforts through various media channels to induce more environmental actions by individuals.

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## 1. Introduction

Global warming poses a major challenge to humankind. This phenomenon's ecological consequences include increased global surface temperatures and rising sea levels, which may endanger numerous coastal cities by the end of the twenty-first century (IPCC, 2014). The IPCC report indicates that human activity is the primary cause of climate change. It becomes increasingly urgent for every nation to reduce greenhouse gas emissions substantially.

Greenhouse gas emissions in Taiwan have nearly doubled in the past two decades, with carbon dioxide contributing most to the increase (Environmental Protection Administration (EPA) Taiwan, 2013). To stem the flow of greenhouse gases, government and non-profit organizations have promoted energy saving and carbon emission reduction programs in recent years. However, Taiwan's total and per-capita carbon dioxide emissions are still among the 20 worst nations (EPA Taiwan, 2013), suggesting that more mitigation effort is necessary.

Research indicates that most people are concerned about climate change, but few are willing to take action to reverse the phenomenon

(Gifford, 2011). A national survey in Taiwan shows that 87% of respondents are concerned about global warming, but less than 30% practice eight of the 13 environmental activities the survey measures (Hsu, 2013). To promote pro-environmental behavior, many studies focus on identifying factors that can effectively induce people's environmental behavior. A review of prior research indicates that most studies investigate psychological variables that may hinder people from taking environmental action. The results consistently demonstrate that environmental beliefs, values, self-efficacy or effectiveness can affect people's environmental behavior (Lee, 2011; Lee et al., 2014; Tabernero & Hernández, 2011; Vicente-Molina, Fernández-Sáinz, & Izaguirre-Olaizola, 2013). However, from management perspectives, these findings may have limited implications for governments, corporations or non-profit organizations. These psychological variables are largely the internal values of individuals. Organizations would still find it difficult to strengthen people's environmental beliefs or efficacy. To provide more practical suggestions, research needs to identify variables that not only have an impact on environmental behavior but can also allow organizations to exert influence in their marketing efforts.

This study proposes that media use may play a critical role in people's adoption of environmental action. Most people obtain information concerning global warming from the media. The survey conducted in Taiwan indicates that people primarily rely on the media to acquire information about global warming or climate change (Hsu, 2013). If evidence shows that exposure and attention to global warming messages from the media play significant roles affecting people's environmental behavior, the governments or civil organizations can work to release more relevant information through the media to promote mitigation actions. Given that media use may have such a potential

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effect, the function of this role in the context of global warming is not well-understood. This study intends to enrich current literature and proposes a research framework to examine the relationship between psychological and media use variables and their effects on different types of pro-environmental behavior.

## 2. Theoretical framework and hypotheses

Behavior is the product of an organism and its environment. Prior research has proposed an ABC theory to understand the antecedents of environmental behavior, where behavior (B) is the product of personal-sphere attitudinal variables (A) and contextual factors (C) (Guagnano, Stern, & Dietz, 1995). Stern (2000) refines and groups the causal variables of environmental behavior into four major types: attitudinal factors (e.g., beliefs, norms or values), contextual forces (e.g., the media or regulations), personal capabilities (e.g., general capabilities or resources) and habit. The different types of causal factors imply that interpretations based on only one type of variable can be limited. Stern suggests using synthetic models to incorporate variables from more than one broad class, postulating relationships among them and using them to explain one or more types of environmental behavior. In line with this perspective, this study incorporates three types of variables, including attitudinal (environmental beliefs), personal capabilities (self-efficacy) and contextual factors (media use), to predict three types of environmental behavior. This study views habit as a behavioral variable such as routine practices. The pro-environmental behavior variable in this study will contain habit. This study selects environmental beliefs and self-efficacy because prior research has demonstrated their function in predicting environmental behavior. Information from the media can be an important contextual force because people rely on the media for global warming messages, which may affect their environmental action. The role of media use on people's environmental behavior needs further clarification, and this study attempts to investigate its function within the following theoretical framework.

### 2.1. Media use and pro-environmental behavior

Media use generally refers to exposure or attention to the media, which include traditional media such as television or newspapers, and the Internet. In environmental studies, researchers usually measure people's media use for general, public affairs content, or for environment-specific content. Few environmental studies focus on the role of media use, but extant research overall shows positive impact from both types of content (public affairs and environment-specific) on environmental issue salience, knowledge and pro-environmental behavior. For instance, early agenda-setting studies reveal a strong relationship between coverage of environmental issues and individual-level knowledge and attitudes toward the issues. Researchers find that television coverage of the environment increases people's knowledge about the issue (Brother, Fortner, & Mayer, 1991). News media attention to pollution also affects the salience of the issue with the public (Ader, 1995). These studies provide evidence of the indirect effects of media use on the audience's perception and knowledge. McLeod, Glynn, & Griffin (1987) directly investigate the impact of media use on the audience and find that public affairs and environment-specific media use yield a strong influence on people's environmental issue salience but not on their environmental behavior. A later study shows that media use has an indirect influence on environmental behavior through social norms, as coverage on recycling may constitute social pressure and increase people's intentions to recycle waste (Chan, 1988).

Although early research does not show a direct impact of media use on environmental behavior, recent studies have provided evidence of both direct and indirect effects of media use. Researchers find that televised public affairs news and nature documentaries positively predict people's pro-environmental behavior (Holbert, Kwak, & Shah, 2003). Media variables including traditional media and Internet attention

also positively predict green purchasing and environmental civic engagement, respectively (Ho, Liao, & Rosenthal, 2015). In addition, newspapers and web use have an impact on environmental information seeking through environmental knowledge (Zhao, 2009). Science and environmental news attention positively predicts the support of emission reduction policies indirectly through a perceived global warming risk (Zhao, Leiserowitz, Maibach, & Roser-Renouf, 2011). Exposure to environmental messages from traditional media and the web also has positive effects on environmental behavior through environmental value, attitude and intention mechanisms (Lee, 2011). Overall, these studies indicate that different types of media use can positively affect the adoption of various environmental actions. However, the measures of media use and pro-environmental behavior in these studies are incomplete. This study employs multiple indicators to observe people's environment-specific media use – exposure and attention to global warming coverage from television, newspapers and the Internet, and proposes that global warming media use has positive effects on individuals' three types of pro-environmental behavior, ranging from various private-sphere personal actions to public-sphere more collective actions.

### 2.2. Pro-environmental behavior

Pro-environmental behavior can be defined by its impact and intent. According to Stern (2000), when defined by its impact, environmental behavior is a behavior that can positively change the availability of materials or the energy or the dynamics of ecosystems. When defined by its intent, pro-environmental behavior is a behavior undertaken with the intention to change the environment from the actor's standpoint. Most environmental studies use the impact-oriented definition of environmental behavior as the ultimate dependent variable and examine one type of behavior, particularly individuals' personal environmental behavior, such as recycling, resource conservation or green consumption.

For impact-oriented environmental behavior, Stern (2000) has distinguished two broad types, public-sphere and private-sphere environmentalism. The former includes active (e.g., active involvement in environmental groups and demonstrations) and non-active behavior in the public sphere (e.g., joining environmental groups and policy support). The latter includes purchase behavior, maintenance and use of household equipment and waste disposal behavior. Based on Stern (1999, 2000), a recent study employs three types of behavior: green purchasing, good citizenship behavior (non-purchase-related activities such as recycling) and environmental activism (e.g., having environmental group membership or engaging in political actions), and this study finds that environmentally conscious people are likely to engage in different types of environmental activities (Lee et al., 2014).

Stern (2000) basically views intent-oriented environmental behavior as the cause of behavior such as people's beliefs and motives. However, individuals may engage in activities that have no direct impact on the environment but show their interest or intent to benefit the environment. For example, seeking more information about global warming or climate change from the media or others is an activity people may engage when facing this issue. Research from media effects calls this type of activity accommodating behavior, as it illustrates how individuals adjust their social environment in response to issue messages (Tsafati & Cohen, 2003; Wei, Lo, & Lu, 2010). People may also promote messages to increase their influence on others or perform tasks advocated by the messages (Sun, Shen, & Pan, 2008; Lin, 2013). This study labels the former as promotional behavior and the latter as proactive behavior. In sum, this study views intent-oriented environmental behavior (e.g., seeking global warming information) as one type of private-sphere pro-environmental behavior and labels it as accommodating behavior. Another type of private-sphere environmental behavior is proactive behavior, which refers to environmental activities that individuals may engage in the private sphere such as recycling, maintenance and green purchase. Regarding promotional behavior, as it usually involves collective action either to address

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