

## Article

# Green Talk or Green Walk: Chinese Consumer Positive Word-of-Mouth to Corporate Environmental Actions in Polluting Industries

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**Abstract:** Although environmental action is regarded as a public relations strategy aiming to manifest a corporate green stance, this not always the case. Many consumers tend to be skeptical of corporate real environmental efforts, especially firms in traditionally dirty industries. However, few studies have focused on this issue. To shed light on such a phenomenon, the present study aims to provide a comprehensive multiple-step multiple-mediator model based on the social intuitionist model and cognitive-affective system theory of personality (CAPS) to examine how corporate environmental actions (substantive vs. symbolic) affect consumer positive word-of-mouth (WOM) and to investigate the cognitive and affective processes of greenwashing perception and other-condemning emotions. Findings from an online Chinese consumer panel of 130 adults indicate that consumers are prone to have more positive WOM for substantive actions compared with symbolic actions; this effect is not only mediated by other-condemning emotions but serially mediated by, firstly, greenwashing perception and, secondly, other-condemning emotions. The current study is conducive to explaining the link between corporate environmental actions and consumer positive WOM from a theoretical argument and empirical evidence, and thus providing suggestions for advertisers and marketers in green marketing about environmental information disclosure.

**Keywords:** substantive environmental actions; symbolic environmental actions; greenwashing perception; other-condemning emotions; cognitive-affective system theory of personality



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## 1. Introduction

With the worsening of environmental issues, such as biodiversity loss, water and air pollution, resources and energy depletion, firms are under mounting pressure to fulfill their social responsibility by enacting aggressive environmental initiatives in a more sustainable and circular manner [1]. Meanwhile, consumers are becoming increasingly aware of the impact of their consumption modes on the natural environment and they are prone to purchase more sustainable and greener products [2]. Corporate environmental actions in the production and consumption phases have drawn wide attention from different stakeholders. Although a commitment to environmental obligation is gradually regarded as a significant public relations strategy for corporations [3,4], prior studies have indicated that environmental legitimacy is difficult to sustain for firms in traditionally polluting industries [5]. Some scholars have argued that effective environmental practice is conducive to responding to the supervision pressure from stakeholders and to increasing consumer patronage [3,6,7]. For example, firms could conduct an environmental management system to substantively reduce the overall environmental impact and boost circular economy practices by the plan-do-check-act (PDCA) cycle and “continuous improvement” approach [1,8]. However, others have also proposed that environmental actions may result in consumer skepticism of firms since their environmental effort seems to be regarded as marketing tactics [9]. For example, the abuse of green labels which are nearly released without an

external certification or assessment by a third-party always evokes consumer confusion and skepticism [2]. In view of this, we contend that understanding an individual's psychological mechanisms underlying their attitudinal and behavioral reactions toward corporate environmental engagements seems quite crucial for the survival and prosperity of firms.

Beyond the fact that consumers may react differently to corporate environmental actions, however, we know little about the psychological mechanism involving their cognitive and affective reactions. Previous studies have contended that cognition usually plays a significant role in evaluating certain events [10]. Firms in traditionally polluting industries such as oil and gas, electricity, paper and chemicals often face severe denunciations of greenwashing [11], and revealing environmental actions as greenwashing requires cognitive analysis. Some scholars indicated that perceived greenwashing is usually regarded as a precisely cognitive reaction to situations where a company conducts false publicity about its authenticity and the credibility of its environmental actions and, in particular, it is an individual's perception of those "insincere, dubious, inflated, or misleading environmental claims [12]. However, the cognitive response may be not an intuitive reaction when exposed to ethical dilemmas [13], and moral emotions would be considered as more automatic and generic reactions according to the social intuitionist model [14]. Accordingly, many scholars have called for more research on "hot" emotional processes [15]. Although extensive research into moral emotions involving corporate social responsibility (CSR) has provided us with considerable insights [16,17], the focus of moral emotions in more detail, namely, corporate environmental issues, is still somewhat scarce. By this logic, the present research mainly examines the role of other-condemning emotions. Other-condemning emotions are engendered by criticizing others' characteristics or behaviors, which include contempt, anger and disgust, namely, the triad of negative social emotions. Consumers tend to be skeptical of the credibility of corporate environmental motives and real green efforts, and they are likely to consider symbolic environmental actions as "cosmetic" or opportunistic strategies propagandizing corporate green stance, which would lead to consumer's other-condemning emotions [18]. In this sense, we adopt the social intuitionist model to verify the mediating role of other-condemning emotions in the relationship between corporate environmental actions and consumer positive WOM, that is, identifying corporate environmental actions in polluting industries as the triggering events, eliciting other-condemning emotions, their emotional responses, which in turn decrease consumer-positive WOM. Although previous studies have indicated that greenwashing perception would be considered as a cognitive process and moral emotions could be viewed as an affective process, some scholars argued that there is a great need to take into account both cognitive and affective processes which are of the same importance for understanding the scope of this issue [19]. To address this research gap, we aim to provide a serial-mediation model based on the cognitive-affective system theory of personality (CAPS) to better explain the psychological mechanism behind both cognitive and emotional aspects. In such a framework, greenwashing perception would be considered as the cognitive process and other-condemning emotions would be viewed as emotional responses, which are psychological channels underlying consumer positive WOM toward corporate environmental actions.

Findings from an online Chinese consumer panel of 130 adults indicate that consumers tend to have more positive WOM to corporate substantive environmental actions than symbolic actions; consumers tend to have more greenwashing perception of corporate symbolic environmental actions than symbolic actions; other-condemning emotions mediate the relationship between corporate environmental actions and consumer-positive WOM; the effect of corporate environmental action on consumer-positive WOM is serially mediated by greenwashing perception (1st mediator) and other-condemning emotions (2nd mediator). This investigation attempts to contribute to the previous literature by (1) unveiling an interesting phenomenon that not corporate environmental actions could win a consumer's favor, which previous studies have ignored; (2) highlighting the mechanism of "hot" emotional process in terms of corporate environmental actions, which contributes

to seeking a deeper insight into the literature of moral emotions in the issues of corporate environmental responsibility; (3) extending research of CAPS into a new realm, as a sizable portion of the CAPS research dealing with consumer's psychological mechanism from both cognitive and affective aspects to corporate environmental responsibility.

## 2. Literature Review and Hypothesis

### 2.1. Corporate Environmental Actions and Consumer Positive Word-of-Mouth

Research addressing business ethics indicated that CSR activities have a positive spillover effect on consumer patronage [6] and positively impact a consumer's willingness to pay, and enhance consumer loyalty [20]. Similarly, Ming and Zhe (2014) also proposed that CSR is not only an ideological imperative but also an economic imperative in today's marketplace [21]. According to Bhattacharya and Sen (2011), CSR is broadly defined as a "firm's or brand's commitment to maximize long-term economic, societal, and environmental well-being by business practice, policies, and resources" [22]. CSR is a multi-faceted construct [23] varying in terms of different stakeholders such as consumers, employees, suppliers, local community and natural environment [24]. To better operationalize CSR, prior researchers have proposed, first, two archetypal CSR domains: the social CSR domain and the environmental CSR domain [25]. The social CSR domain focuses on the responsible and sustainable relationships between corporations, consumers, employees, local communities and, in general, the relationships with all relevant parties within society. The environmental CSR activities mainly emphasize the link and direct interaction between firms and natural environment [25], such as establishing waste management system [26], adopting recyclable and durable materials [1]. Since the natural environment plays a significant role in sustainable consumption, which has a direct or indirect influence on the mode of production as well as society [27], the present study mainly focuses on the environmental CSR activities taken by firms.

As an important dimension of CSR initiatives, corporate environmental actions could win support from consumers and increase market share [28,29]. However, numerous findings show that green practices would create economic gains, but this is not always the case, especially when companies started to communicate their engagements in reducing environmental imprint by excessively stressing commitments rather than their real efforts. For example, Link and Naveh (2006) did not find any financial data revealing support for increasing profits by implementing ISO 14001 in 40 organizations [30]. According to institutional theory, all corporate environmental actions are composed of substantive and symbolic dimensions [3]. Substantive environmental actions involve a series of concrete and visible actions in their management goals, organizational structures and social institutionalization initiatives [5,29], where the firms discuss their environmental responsibility in terms of what they are doing now or what they have done [3]. For example, Marrucci et al. (2020) adopted the DMAIC (Define-Measure-Analyse-Improve-Control) model to examine the waste management system in supermarket, which aims to identify a sustainable process towards circular economy [31]. By contrast, symbolic environmental actions represent an array of superficial, negligible and easy-to-be-observed environmental gestures aiming to obtain external validation and social support [32], such as establishing an environmental supervision committee, using green labels or trademarks, etc. Firms plan to show their organizational values aligning with societal values through symbolic environmental actions by stressing what they will do, as opposed to discussing what they are doing or they have done substantively [33,34]. Although these two types of environmental action are assumed to secure environmental legitimacy based on the perspective of investors, little is known about which actions, and in what mechanism, are likely to shape corporate environmental legitimacy from the perspective of consumers [5]. Specifically, the cognitive and emotional processes underlying consumer responses to corporate environmental actions have yet to be examined empirically [15,35]. Since consumers usually prefer receiving word-of-mouth (WOM) information from those who benefit from CSR activities to acknowledging information by mass media that shapes an individual's views on environmental CSR activities [25],

positive WOM is regarded as a consumer's reaction to corporate environmental actions. Accordingly, we first try to investigate the relationship between corporate environmental actions and consumer positive WOM.

Firms in traditionally polluting industries—such as oil and gas, electricity, iron and steel, pulp and paper—are under mounting pressure to fulfill their social responsibility by enacting aggressive environmental initiatives in terms of production procedure, actual products and the post-production process [36,37]. Tangible and substantive environmental actions not only contribute to improving the corporate negative environmental footprint but help reverse consumers' negative perceptions about these firms [3,31], which shows that firms are required to invest more inputs (e.g., capital, manpower and time) or even optimize the existing patterns and procedures of production systems to improve its environmental performance. Previous studies have indicated that substantive environmental actions could help increase credibility in the eyes of consumers as they are demonstrating a high standard in environmental management in a transparent manner. For example, Hewlett-Packard Co., the largest PC maker in the world, sells laptops to decrease the usage of disposable packaging. SC Johnson Wax changes the product formulation which removes polybutylene terephthalate to reduce "white pollution". Consumers can easily find positive evidence that the firm has conveyed an aura of goodness about human well-being since firms operate and offer products and services in a more substantive manner [5], and they tend to have positive WOM toward corporate marketing initiatives. However, symbolic environmental actions could give consumers the impression that these actions attempt to provide "cover" for their poor environmental footprint by taking steps in the right way, and consumers are likely to conduct destructive punitive behaviors to the offending corporations [38,39], such as negative WOM. In this manner, we propose the following hypotheses:

**Hypotheses 1 (H1).** *Consumers tend to have more positive WOM to corporate substantive environmental actions than symbolic environmental actions.*

## 2.2. Corporate Environmental Actions and Greenwashing Perception

Since the majority of consumers are susceptible to inferior goods and corporate environmental scandals more than ever, the firms in traditionally polluting industries are likely to face risks of being labeled as greenwashers [31,40]. Research shows that as many as 44% of American consumers do not trust a firm's green claims and about 77% prefer to boycott the firms if misled [41]. Such phenomenon could be considered as greenwashing. Greenwashing is usually regarded as the intersection of corporate poor environmental footprint and positive green claims [42]. Greenwashing perception is defined as a psychological perception of whether a company deliberately releasing distorted and misleading information which frames its activities as "green, eco-friendly and sustainable". The prevalence of greenwashing perception is related to consumers' skepticism of firm's pro-environmental practices, especially where the credibility of an environment-friendly quotient is hard to verify and where the profit motive takes priority over the environmental motive [41]. Similarly, Brunton et al. (2015) found that consumers tend to be more critical about the ulterior motive of firms within polluting sectors and so criticize their environmental engagements, especially when corporate environmental efforts seem to conflict with their core business areas [43]. In addition, Marrucci et al. (2021) proposed that the profusion of ecolabels may raise consumer's confusion and greenwashing perception, especially the labels that are released without an external certification or assessment by a third-party [2].

Although firms could build or burnish a strong corporate image and reputation through green claims to a certain extent [44], such communications may be decoupled greatly from the actual implementation of environmental actions. Guo et al. (2017) argued that greenwashing perception may be related to the concealment or selective disclosure of corporate real environmental performance [45]. Cliath (2007) also found that greenwashing is prone to include a series of deliberate, "merely symbolic" claims to increase symbolic benefits from a ceremonial superficiality of business management [46]. The previous studies have indicated that firms may be seen as untruthful, calculating and "cashing in

on the green movement” when they rely exclusively on symbolic environmental actions, and ultimately leading a consumer’s greenwashing perception [47]. Similarly, Bowen and Aragon-Correa (2014) also argued that firms are likely to be viewed as greenwashing if they only release signals to consumers about what they will do or plan to do in terms of environmental deterioration [48]. Contrary to symbolic environmental actions, substantive actions usually win consumer’s favor since firms devote themselves to improving their environmental imprints by clean technologies or effective environmental management procedure. According to Berrone et al. (2009), environmental actions could enhance corporate social acceptance as long as they “walk the talk” [49]. By this logic, substantive actions may be an effective way to decrease a consumer’s greenwashing perception. However, influenced by perceptions of skepticism to corporate real motive, consumers would have more greenwashing perception to corporate symbolic environmental actions. In this manner, we propose the following hypotheses:

**Hypotheses 2 (H2).** *Consumers tend to have more greenwashing perception to corporate symbolic environmental actions than substantive environmental actions.*

### 2.3. The Mediating Effect of Other-Condemning Emotions

Imagine being exposed to corporate irresponsible environmental engagements, such as dumping of untreated sewage, discharging of black smoke in a flagrant way. How do you make sense of, interpret and respond to these scenarios? Will you respond in an automatically emotional way? Do you feel contempt, anger and disgust, that is, you respond to these scenarios with moral emotions, specifically, with other-condemning emotions?

Moral emotions refer to the emotions related to the whole human well-being instead of individual welfare, which are elicited by perceptions violating human freedom, dignity and the ethic of community [50–52]. According to Haidt (2003), moral emotions can be divided into four categories: other-condemning emotions, other-praising emotions, self-conscious emotions and other-suffering emotions [50]. The moral emotions studied herein mainly involve other-condemning emotions. Other-condemning emotions are engendered by criticizing others’ characteristics or behaviors, which include contempt, anger and disgust, namely, the triad of negative social emotions.

In recent years, other-condemning emotions have usually been discussed in the literature of business ethics under the context of CSR. For example, Antonetti and Maklan (2016) empirically examined the mediating role of anger in the relationship between corporate irresponsible behaviors and negative attitude to the offending company [53]. Similarly, Xie et al. (2019) indicated that consumers tend to experience contempt, anger and disgust toward corporate moral misconduct [14]. Although extensive research into other-condemning emotions involving CSR has provided us considerable insights, the focus of emotions in a more detailed field, namely the corporate environmental issue, is still somewhat scarce. Additionally, according to the social intuitionist model, moral emotions seem to be more automatic and generic compared with cognitive reactions [52,54]. Xie et al. (2015) indicated that moral emotions are combinations of inherited and learned responses to social cues violating one’s moral sensitivities [16]. For simplicity of exposition, moral emotions are likely to trigger moral judgement of specific events and play a leading role in intuitive process of moral judgement, which influence consumer responses. The social intuitionist model proposed by Hadit spurs scholars to pay more attention to the role of moral emotions, and helps call into question the predominance of rational cognition in the study of moral judgement for a long time. Therefore, this section aims to investigate the mediating role of the other-condemning emotion in the relationship between corporate environmental actions and consumer positive WOM to underline the “hot” emotional process in corporate environmental issues [15,16,19].

Adopting the social intuitionist model in this study, we identify corporate environmental actions in polluting industries as the triggering events, eliciting other-condemning emotions, their emotional responses, which, in turn, decrease consumer positive WOM. Specifically, consumers are susceptible to consider symbolic environmental actions as

“cosmetic” or opportunistic strategies propagandizing its green stance due to poor environmental performance, thus, leading a consumer’s contempt [18]. Feelings of anger seem to be related to violations of the ethic of autonomy [18,55]. Russell et al. (2013) indicated that anger is evoked by the violations of a moral standard or others’ welfare [56]. Although symbolic action may not damage the environment directly, there are still potential threats to our health and the sustainability of the whole world if we take an indulgent attitude. By this logic, individuals are prone to experience feelings of anger when exposed to symbolic actions. Some scholars suggested that feelings of disgust are linked to mistrust related to morality [51]. Skepticism toward corporate ulterior motives is similar to the feelings of distrust to a certain extent when firms partake in symbolic environmental actions [38]. In this sense, consumers are prone to experience disgust toward corporations when exposed to symbolic actions. In summary, we argue that corporate symbolic environmental actions could evoke other-condemning emotions (i.e., contempt, anger and disgust) among consumers compared with substantive actions.

Moreover, the social intuitionist model proposed that individuals are compelled to cope with the certain emotions when exposed to them. Emotions could be functioning as information activation whereby triggering the points in associative networks to generate an individual’s reactions [57]. In short, an individual’s responses could be driven by certain emotions. Considering that other-condemning emotions elicited by corporate symbolic environmental actions are related to individual’s pro-social motive [58], consumers are likely to punish the offenders, which, in turn, maintain a positively moral self-image. Thus, we argue that consumers may have negative WOM when confronted with corporate symbolic environmental actions under other-condemning emotions. In this manner, we propose the following hypotheses:

**Hypotheses 3 (H3).** *Other-condemning emotions mediate the relationship between corporate environmental actions and consumer positive WOM.*

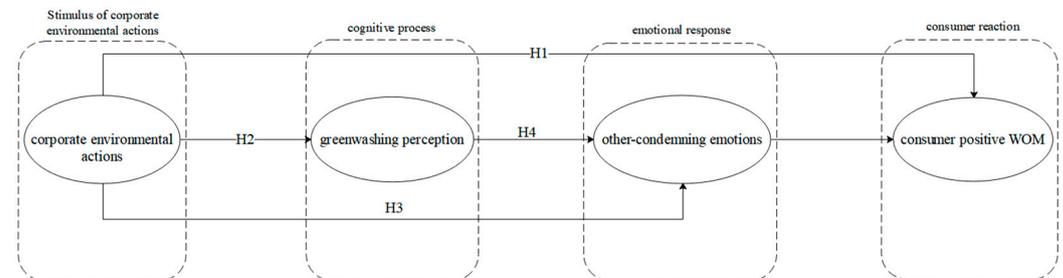
#### *2.4. The Serial Mediating Effect of Greenwashing Perception and Other-Condensing Emotions*

As stated earlier, greenwashing perception could be considered as a cognitive process and other-condemning emotions could be viewed as an affective process. However, some scholars argued that there is a great need to take into account both processes which are of the same importance for understanding the scope of this issue [19]. Xie et al. (2018) empirically examined the mediating role of attitude and moral emotions, and considering these two factors as parallel, independent mediators [14]. To deepen their research work and echo the prior literature, the present study aims to investigate the serial-mediating role of greenwashing perception and other-condemning emotions in the relationship between corporate environmental actions and consumer positive WOM based on the cognitive-affective system theory of personality (CAPS).

According to the CAPS, the cognitive-affective representations are not discrete units that are simply elicited as “responses” in isolation, and they could make distinctive impacts on information-processing strategies [59]. It is continuously activated by its own internal feedback system through chronic activation of cognition, affection and their interactions [60]. As stated earlier, greenwashing perception involves a psychological perception of whether a corporation deliberately releasing distorted and misleading information which frames its activities as “green, eco-friendly and sustainable” [47], and it represents a cognitive unit within the personality system. Meanwhile, other-condemning emotions reflect negative emotional state caused by certain events, which belong to an affective unit within a personality system. Based on this theory, we view greenwashing perception as a consumer’s cognitive response stimulated by environmental actions, which triggers and then interacts with other-condemning emotions, a consumer’s affective responses, which, in turn, decrease consumer-positive WOM. In this manner, we propose the following hypotheses:

**Hypotheses 4 (H4).** *The effects of corporate environmental actions on consumer positive WOM could be serially mediated by greenwashing perception (1st mediator) and other-condemning emotions (2nd mediator).*

The relationships of antecedents and outcomes investigated in this research model are shown in Figure 1.



**Figure 1.** The research model.

### 3. Methods

#### 3.1. Choice of Industry Used in the Experiment

With the rise of the environmental movement, regulatory pressure has been imposed on environmentally sensitive industries. Scholars and practitioners have claimed that firms in polluting industries should take greater responsibility for the construction of an eco-friendly society [34]. Consistent with the prior studies, this study selected an traditionally dirty industry as the experimental background [3].

According to the "Guidelines for Environmental Information Disclosure of Listed Companies" released by Ministry of Environmental Protection of the People's Republic of China, there are 16 kinds of environmental sensitive industries, such as electricity, iron and steel, mining, chemical engineering, building materials, paper, printing, cement, electrolytic aluminum, metallurgy, petrochemical, brewing, pharmacy, fermentation, textile and leather. In view of the focus of this study being mainly on consumer positive WOM to corporate environmental actions, we selected an industry which is related closely to their daily life.

To determine the industry used in the experimental background, we adopted Delphi and focus group interviews to collect the suggestions from experts and consumers respectively. They were told: "There are 16 kinds of environmental sensitive industries, such as electricity, iron and steel, mining, chemical engineering, building materials, paper, printing, cement, electrolytic aluminum, metallurgy, petrochemical, brewing, pharmacy, fermentation, textile and leather. To what extent are you focused on the above sectors when you make a purchase choice," rated on a 7-point scale ranging from 1 ("focused hardly on this sector") to 7 ("focused entirely on this sector"). Finally, the paper industry was determined as the environmentally sensitive sector that is related closely to consumer daily consumption.

#### 3.2. Development of the Stimulus Materials

As an important channel access to the firm's information, media reports play a significant role in acquiring corporate environmental engagements [34]. Accordingly, we selected journals and websites with strong social influence as the experimental background of our study, which was highlighted in the prior literature [5], such as China Environment News, CSR-China (<https://www.chinacsr.com/cn/>, accessed on 29 April 2021) and The People's Daily.

Through exploring the media reports of corporate environmental actions from different sources, we screened out 10 pieces of news including development and utilization of biomass resources, investment in the construction of sewage treatment stations, registration of green trademarks, participation in "Earth Hour", recycling technology of packaging materials, carrying out ISO 14000 certification, releasing green claims and environmental

protection polices, investment in carbon black technology and in renewable water technology. Then, three experts researching in CSR and marketing were invited to verify the legibility and appropriateness of the stimulus materials. After they provided feedback about the experimental stimulus, we made some slight modifications to the scenarios. Notably, words with a subjective meaning were needed to avoid and neutral expressions in the materials were chosen.

Ultimately, after the consultation with the experts and borrowed the research of Li et al. (2017) [5], we selected investing in the construction of sewage treatment station and partaking in the “Earth Hour” activity as the substantive experimental stimuli and symbolic experimental stimuli respectively. The experiment was manipulated by the experimental stimulus materials. Appendix A presents the full versions of scenarios for more details.

### 3.3. Experimental Design and Data Collection

We developed stimulus materials using a fictitious paper manufacturer “Wonderful Co. Paper” to avoid a confounding effect stemming from brand familiarity. Firstly, we pretested the professionally developed experimental material among Chinese adult consumers from an online consumer panel. A total of 80 adult consumers were randomly assigned to the experimental conditions, with 40 consumers in each group. However, a total of 77 valid data were collected, with 37 consumers in symbolic action group and 40 consumers in substantive action group. The qualitative feedback indicated that all participants were unfamiliar with this fictitious paper manufacturer and found both substantive and symbolic experimental stimuli were realistic. Moreover, participants in different groups could clearly discriminate the substantive and symbolic environmental actions ( $M_{\text{substantive}} = 5.913$ , standard deviation (SD) = 0.825 vs.  $M_{\text{symbolic}} = 3.986$ , SD = 1.310;  $F [1, 76] = 96.028$ ,  $p < 0.001$ ). The results indicated that stimulus materials are effective to represent the substantive and symbolic actions.

Next, we designed a between-subjects experiment with one approach of two levels (substantive vs. symbolic). A total of 140 Chinese adults from an online consumer panel were recruited, and they were randomly assigned to one of two experimental conditions involving either substantive environmental actions or symbolic actions, taken by a fictitious paper manufacturer, “Wonderful Co. Paper.” In substantive environmental actions group, participants were provided with both a brief introduction about Wonderful Co. Paper and a neutral description stating that it dealt with water pollution by introducing advanced sewage disposal equipment and building a high-standard sewage treatment station. In a symbolic environmental action group, in addition to a brief introduction about Wonderful Co. Paper, the participants learned that this firm took an active part in the “Earth Hour” activity to make environmental commitment. All corporate environmental actions’ information was presented in written format on the webpage to simulate the fact that consumers usually browse information on the social media page or website.

There were 10 participants who failed to follow the instructions (e.g., skipped through the questions, gave all the same answers) were removed from the data, leaving a sample of 130 ( $N_{\text{substantive group}} = 64$ ,  $N_{\text{symbolic group}} = 66$ ) adult consumers for analyses. Table 1 provides the details of sociodemographic information. Of the participants, 0.7% were below 20 years old, 62.3% were between 21 to 30 years old, 34.6% were 31 to 40 years old, 2.4% were over 41 years old. More than half of the participants frequently took part in corporate environmental actions. Moreover, a total of 55 participants purchased the paper products more than 7 times in the past half year. These results indicated that the participants usually take an active part in the corporate environmental actions and paper products consumption are relatively common in consumers’ daily life, thus forming a good sample to our study.

**Table 1.** Sociodemographic information.

	Frequency	Percent (%)
Gender		
Male	75	57.7
Female	55	42.3
Age		
20 and below	1	0.7
21–30	81	62.3
31–40	45	34.6
41 and above	3	2.4
Education		
High school and below high school graduate	5	3.8
Bachelor's degree	106	81.5
Postgraduate	19	14.7
Participation in CEA frequency		
Scarcely	12	9.2
Sometimes	50	38.5
Frequently	68	52.3
Buying paper products frequency		
1–3	24	18.5
4–6	51	39.2
7–9	34	26.2
10 and above	21	16.1

Notes: CEA: corporate environmental actions.

### 3.4. Measures

After exposure to the experimental stimuli, participants were invited to finish manipulation check for the corporate environmental actions borrowed from Li et al. (2017) [5]. Next, participants were asked to report their positive WOM ( $\alpha = 0.926$ ) on a 5-item, 7-point Likert scale by Harrison–Walker (2001) [61]. They were also asked to fill in greenwashing perception ( $\alpha = 0.915$ ) scale with 5 items adopted from Chen and Chang (2013) [62], and complete other-condemning emotions scale ( $\alpha = 0.989$ ) with 9 items borrowed from Xie et al. (2015) [16]. Then, we adopted two items from Leonidou and Skarmas [63,64] to measure the consumers' environmental attitudes ( $\alpha = 0.780$ ), which treated as a control variable. All constructs measured on 1 (“extremely disagree”) to 7 (“extremely agree”) point Likert scales. Finally, participants were asked to provide their sociodemographic information. Appendix B presents more details on measures employed by the substantive actions group and symbolic actions group.

## 4. Data Analysis and Results

### 4.1. Reliability and Manipulation Checks

Table 2 provides the evidence of reliability, as the reliability of all constructs for subscales ranged from 0.780 (environmental attitude) to 0.989 (other-condemning emotions), and thus exceeded the recommended value. The results indicated that the reliability of subscales was not a problem. To verify convergent validity and discriminant validity, we used confirmatory factor analysis. Meanwhile, Table 2 provides the evidence of convergent validity, as all items were loaded over 0.70 on their factors, with an average variance extracted (AVE) for each factor greater than 0.50 [65].

**Table 2.** Measurement model and factor loading.

Constructs	Items	Factor Loadings	Reliability (Alpha)	CR	AVE
Greenwashing Perception	GP1	0.810	0.915	0.937	0.747
	GP2	0.879			
	GP3	0.881			
	GP4	0.873			
	GP5	0.877			
Other- Condemning Emotions	Con1	0.956	0.989	0.991	0.921
	Con2	0.956			
	Con3	0.962			
	Ang1	0.951			
	Ang2	0.955			
	Ang3	0.954			
	Dis1	0.969			
Dis2	0.965				
Positive WOM	PWOM1	0.892	0.926	0.955	0.809
	PWOM2	0.883			
	PWOM3	0.894			
	PWOM4	0.863			
	PWOM5	0.872			
Environmental Attitude	EA1	0.908	0.780	0.904	0.825
	EA2	0.908			

Notes: GP: greenwashing perception; Con: contempt; Ang: anger; Dis: disgust; PWOM: positive word-of-mouth (WOM); EA: environmental attitude.

Table 3 provides the means, standard deviations for other-condemning emotions, greenwashing perception, positive WOM and environmental attitude in the substantive group, symbolic group and the overall group, respectively. Table 4 provides the correlations and discriminant validity. Discriminant validity is achieved if the square root of AVE in each construct is greater than the correlation coefficients between two constructs [66]. The results revealed that constructs in the measurement model seemed to have acceptable levels of the discriminant validity.

**Table 3.** Means and standard deviation.

Constructs	Substantive Group ( <i>n</i> = 64)	Symbolic Group ( <i>n</i> = 66)	Overall ( <i>n</i> = 130)
OCE	1.866 (1.108)	5.305 (1.432)	3.612 (2.145)
GP	2.909 (1.181)	5.327 (1.189)	4.137 (1.693)
PWOM	4.750 (1.207)	2.400 (1.089)	3.557 (1.643)
EA	6.594 (0.667)	6.106 (1.263)	6.346 (1.043)

Notes: OCE: other-condemning emotions; GP: greenwashing perception; PWOM: positive WOM; EA: environmental attitude. The standard deviation of constructs was in the parentheses.

**Table 4.** Measurement scales used and properties.

Constructs	OCE	GP	PWOM	EA
OCE	<b>0.959</b>			
GP	0.813 **	<b>0.864</b>		
PWOM	−0.757 **	−0.741 **	<b>0.899</b>	
EA	−0.271 **	−0.245 **	0.126	<b>0.908</b>

Notes: \*\*  $p < 0.01$ . OCE: other-condemning emotions; GP: greenwashing perception; PWOM: positive WOM; EA: environmental attitude. Square root of AVE was on the diagonal in bold.

The manipulation check for environmental actions was successful: participants in different groups could clearly discriminate the substantive and symbolic environmental actions ( $M_{\text{substantive}} = 6.156$ ,  $SD = 0.603$  vs.  $M_{\text{symbolic}} = 2.962$ ,  $SD = 1.507$ ;  $F [1, 129] = 248.734$ ,  $p < 0.001$ ).

#### 4.2. Hypotheses Tests

##### 4.2.1. Confirmatory Factor Analysis

Prior to the hypothesis testing, we conducted analyses to determine the acceptability of fit of the measurement models. Root mean square error of approximation (RMSEA), Comparative Fit Index (CFI), Incremental Fit Index (IFI) and Tucker–Lewis Index (TLI) by Analysis of Moment Structure (AMOS) software were used to assess the model fit. The results were shown in Table 5. Results indicated that only the fits of the four-factor measurement model are within the acceptable range, and the fits of the other measurement models were unsatisfactory. The four-factor measurement model fit values are as follows:  $\chi^2 = 271.418$ ,  $df = 163$ ,  $\chi^2/df = 1.665$ ,  $CFI = 0.971$ ,  $TLI = 0.966$ ,  $IFI = 0.971$ ,  $RMSEA = 0.072$ .

**Table 5.** Confirmatory factor analysis.

Model	$\chi^2$	df	$\chi^2/df$	RMSEA	CFI	TLI	IFI
Two-factor measurement model	688.187	168	4.096	0.155	0.862	0.843	0.862
Three-factor measurement model	458.703	166	2.763	0.117	0.922	0.911	0.923
Four-factor measurement model	271.418	163	1.665	0.072	0.971	0.966	0.971
Conceptual model	273.047	164	1.665	0.072	0.971	0.966	0.971
Full mediation model	360.961	165	2.188	0.096	0.948	0.940	0.948
Parallel mediation model	341.820	164	2.084	0.092	0.953	0.945	0.953
Reverse causality model	349.259	165	2.117	0.093	0.951	0.944	0.951

Note: Two-factor model: other-condemning emotions + greenwashing perception + positive WOM, corporate environmental actions; Three-factor model: other-condemning emotions + greenwashing perception, positive WOM, corporate environmental actions. Four-factor model: other-condemning emotions, greenwashing perception, positive WOM, corporate environmental actions.

The results are shown in Table 5. The conceptual model achieves a good fit ( $\chi^2 = 373.047$ ,  $df = 164$ ;  $CFI = 0.971$ ,  $TLI = 0.966$ ,  $IFI = 0.971$ ,  $RMSEA = 0.072$ ). To rule out alternative explanations, we compared the conceptual model to three alternatives (i.e., full mediation model, parallel mediation model and reverse causality model). First, we examined a full mediation model not including a direct path from corporate environmental actions to consumer-positive WOM. The fits of this model were unsatisfactory. Second, a parallel mediation model, where corporate environmental actions influence consumer positive WOM through the parallel mediation of greenwashing perception and other-condemning emotions, provides unsatisfactory fits to the data. Third, a reverse causality model, where corporate environmental actions influence consumer positive WOM through greenwashing perception (1st mediator) and other-condemning emotions (2nd mediator), provides unsatisfactory fits as well.

##### 4.2.2. Environmental Actions and Consumer Positive Word-of-Mouth (WOM)

H1 predicted that consumers tend to have more positive WOM to corporate substantive environmental actions than symbolic actions. An analysis of variance (ANOVA) with corporate environmental actions as the independent variables and consumer positive WOM as the dependent variable revealed that consumers who were exposed to substantive actions ( $M = 4.750$ ,  $SD = 0.929$ ) reported positive WOM more than those who were exposed to symbolic actions ( $M = 2.400$ ,  $SD = 0.746$ ;  $F [1, 129] = 253.624$ ,  $p < 0.001$ ). In summary, these results supported H1.

##### 4.2.3. Environmental Actions and Greenwashing Perception

H2 predicted that consumers tend to have more greenwashing perception to corporate symbolic environmental actions than substantive actions. An ANOVA with corporate

environmental actions as the independent variables and greenwashing perception as the dependent variable revealed that consumers who were exposed to symbolic actions ( $M = 5.327$ ,  $SD = 0.813$ ) had more greenwashing perception than those who were exposed to substantive actions ( $M = 2.909$ ,  $SD = 0.791$ ;  $F [1, 129] = 295.204$ ,  $p < 0.001$ ). In summary, these results supported H2.

#### 4.2.4. Multiple Mediation Analyses

H3 predicted that other-condemning emotions mediate the relationship between corporate environmental actions and consumer-positive WOM. H4 predicted that greenwashing perception (1st mediator) and other-condemning emotions (2nd mediator) serially mediate the relationship between corporate environmental actions and consumer-positive WOM. Accordingly, we conducted a single mediation analysis to examine the process model of the “corporate environmental actions → other-condemning emotions → consumer positive WOM” and a serial mediation analysis to test the overall process model of the “corporate environmental actions → greenwashing perception → other-condemning emotions → consumer positive WOM”. To test the mediational paths from corporate environmental actions to consumer positive WOM, we thus constructed bias-corrected confidence intervals with 5000 bootstrapped samples [67] to investigate the mediating role of other-condemning emotions and the serial-mediating role of greenwashing perception and other-condemning emotions. To this end, we thus adopted bootstrapping method (PROCESS model 6) to obtain the bias-corrected 95% confidence intervals for the total effect, direct effect, total indirect effect and the specific indirect effects.

The mediation results are shown in Table 6. Results indicated a significant total effect of corporate environmental actions on positive WOM ( $\beta = 0.839$ ,  $SE = 0.052$ ,  $t = 16.034$ ,  $p < 0.001$ ). Moreover, the direct effect was significant with a point estimate of 0.559 ( $t = 5.431$ ,  $p < 0.001$ ), and the total indirect effect of corporate environmental actions on positive WOM with an estimate of 0.281 and a 95% confidence interval between 0.075 and 0.528. Additionally, it should be noted that the specific indirect effect through other-condemning emotions was significant ( $\beta = 0.112$ , standard error (SE) = 0.067, 95% confidence interval (CI) = [0.016; 0.277]). Meanwhile, the specific indirect effect through greenwashing perception and other-condemning emotions was also significant ( $\beta = 0.066$ ,  $SE = 0.036$ , 95%CI = [0.015; 0.167]). However, the specific indirect effect through greenwashing perception was not significant ( $\beta = 0.103$ ,  $SE = 0.086$ , 95%CI = [-0.060; 0.278]). Thus, greenwashing perception and other-condemning emotions serially mediate the relationship between corporate environmental actions and consumer-positive WOM; other-condemning emotions mediate the relationship between corporate environmental actions and consumer-positive WOM. In summary, these results supported H3 and H4.

In order to further examine which emotion is more significant compared with others, we conducted a paired *t*-test on other-condemning emotions by different experimental groups (substantive group vs. symbolic group). The results are shown in Table 7.

It can be seen in Table 7 that the mean of disgust was higher than the mean of contempt at a significant estimate of 0.027 ( $t = 2.257$ ,  $p < 0.05$ ) in symbolic group. However, the differences of the mean of other emotions were not significant in a substantive or symbolic group. We argue that disgust is more significant than contempt when in the context of corporate symbolic environmental actions.

Table 6. Mediation results.

	Effect	Standard Error	95% Bootstrapped Confidence Interval
Environmental actions → Other-condemning emotions → Positive WOM	<b>0.112</b> **	0.067	[0.016; 0.277]
Environmental actions → Greenwashing perception → Other-condemning emotions → Positive WOM	<b>0.066</b> **	0.036	[0.015; 0.167]
Environmental actions → Greenwashing perception → Positive WOM	<b>0.103</b>	0.086	[−0.060; 0.278]
Total Indirect Effect	0.281 **	0.119	[0.075; 0.528]
Direct Effect	0.559 ***	0.103	[0.355; 0.762]
Total Effect	0.839 ***	0.052	[0.736; 0.943]

Notes: \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ . The indirect effects of the specific mediation paths were in bold. Environmental actions were manipulated as dummy variables (substantive action = 1, symbolic action = 0).

Table 7. Paired samples test.

		95% Confidence Interval of the Difference				t	df	Sig. (2-Tailed)
Group		Mean	Std. Deviation	Lower	Upper			
Symbolic group	Pair 1 Dis-Ang	0.146	0.839	−0.059	0.353	1.417	65	0.161
	Pair 2 Dis-Con	0.197	0.709	0.227	0.371	2.257	65	0.027
	Pair 3 Ang-Con	0.051	0.827	−0.153	0.254	0.496	65	0.622
Substantive group	Pair 1 Dis-Ang	−0.068	0.465	−0.184	0.048	−1.166	63	0.248
	Pair 2 Dis-Con	−0.047	0.460	−0.162	0.068	−0.816	63	0.418
	Pair 3 Ang-Con	0.021	0.557	−0.118	0.160	0.299	63	0.766

Note: Dis: disgust; Ang: anger; Con: contempt.

#### 4.2.5. Tests of Reverse Causality

As stated before, greenwashing perception would be considered as the cognitive process in the issues of corporate environmental responsibility. Some scholars have argued that cognitive process is likely to consume individual's cognitive resource and, notably, rational decision-making involving the calculation based on cost-benefit may be not the intuitive reaction when in ethical dilemma [13]. However, according to the social intuitionist model, moral judgement made by individuals in a certain moral context depends on moral intuition, and moral emotions may be the direct reaction. By this logic, other-condemning emotions may be the direct and automatic reaction when in an ethical dilemma instead of greenwashing perception.

However, we tested for reverse causality, predicting a serial mediation model in which other-condemning emotions were antecedents to greenwashing perception toward the corporate environmental actions. For positive WOM, the results indicated that when taking other-condemning emotions as the first mediator and greenwashing perception as the second mediator, the serial mediating effect was not significant ( $\beta = 0.039$ ; 95%CI = [−0.015; 0.120]). In summary, testing for reverse causality further supported the robustness of H4.

## 5. Discussion

Recently, firms have been compelled to install rigorous environmental practice, which is in response to an increased demand for green establishments stemming from the rise in green consumerism. Importantly, not only are companies devoting increased endeavors to their green initiatives, but also the consumers focus primarily on corporate environmental actions in their daily life. In this case, many firms have committed themselves to green practice through diverse environmental engagements. Leonidou and Skarmas have proposed that green products are virtually everywhere [63], such as green energy, green semiconductors, green technology, green equipment, green architecture, etc. However, the reality is that not all consumers are willing to “pay for” the corporate environmental initiatives especially the firms in traditionally dirty industries, such as oil and gas, electricity, paper and chemicals. Some consumers may regard corporate green engagements as a

marketing tool selling its image as being green. Therefore, it seems important to explore why and how consumers make such reactions.

To address this research question, we propose a theoretical model that examines whether corporate environmental actions in traditionally dirty industries lead to consumer's greenwashing perception and other-condemning emotions, which in turn, might influence consumer-positive WOM. Specifically, greenwashing perception and other-condemning emotions play a serial mediating role in the relationship between corporate environmental actions and consumer-positive WOM based on the CAPS; meanwhile, there exists a simple mediating effect of other-condemning emotions based on the social intuitionist model. Between-subjects experiment with one way of two levels (substantive vs. symbolic) is conducted to test the presented hypotheses. Based on the research data and analysis, some findings are presented below.

Firstly, consumers are prone to have more positive WOM to corporate substantive environmental actions compared with symbolic actions. As mentioned above, corporate substantive environmental actions could convey a firm's green instance and help form credibility by integrating strict environmental guidelines and management into their business operations, which are favored by consumers [3,5]. For example, some firms spare no effort to design, develop and conduct a sound environmental management system in terms of the PDCA cycle (Deming cycle) to take substantive implementation of ISO 14001 [1,8], which could satisfy consumer's expectations that corporations should fulfill their environmental responsibility by committing themselves to aggressive environmental initiatives [5]. However, by contrast, the symbolic dimension of environmentalism simply aims to show signals to the general public that a firm's organizational values are aligning with societal values, which portrays a green image in the eyes of consumers but without making any substantive improvement on environment [68]. In that regard, consumers are likely to report more positive WOM in the context of corporate substantive environmental actions compared with symbolic actions. Our findings are consistent with the research of Li et al. [5] (2017), who indicated that substantive environmental actions could help enhance corporate environmental legitimacy than symbolic actions from the perspective of consumers.

Secondly, we found that, on the one hand, other-condemning emotions mediate the relationship between corporate environmental actions and consumer positive WOM, but the mediating role of greenwashing perception is not significant when other-condemning emotions are included in the model. One reason for this phenomenon may be due to the fact that moral emotions, according to the social intuitionist model, seem to be more automatic and generic compared with cognitive reactions [52,54]. This finding is also in line with Xie et al. [16] (2015), showing that moral emotions are combinations of inherited and learned responses to social cues violating one's moral sensitivities. On the other hand, other-condemning emotions play a serial mediating role together with greenwashing perception in the relationship between corporate environmental actions and consumer positive WOM. According to the CAPS, the cognitive-affective representations are not discrete units that are simply elicited as "responses" in isolation, and they could make distinctive impacts on information-processing strategies [59]. It is continuously activated by its own internal feedback system through chronic activation of cognition, affection and their interactions. Accordingly, unmasking the corporate symbolic environmental actions as greenwashing requires individuals' rational cognition, thereby arousing negative emotional state, namely, other-condemning emotions, which, in turn, decrease consumer-positive WOM.

## 6. Conclusions and Implications

### 6.1. Conclusions

The present study contributes to explaining why consumers behave differently and even in an opposite way when exposed to corporate environmental actions within traditionally dirty industries. To shed light on this interesting phenomenon, we provide a comprehensive multiple-step, multiple-mediator model based on the social intuition-

ist model and cognitive-affective system theory of personality (CAPS) to examine how corporate substantive or symbolic environmental actions affect consumer positive word-of-mouth (WOM), and, more importantly, the cognitive and affective processes of greenwashing perception and other-condemning emotions in the relationship between corporate environmental actions and consumer-positive WOM. Our investigation revealed that all hypotheses were supported. Specifically, consumers are likely to have more positive WOM to substantive actions compared with symbolic actions; this effect is not only mediated by other-condemning emotions but serially mediated by, firstly, greenwashing perception and, secondly, other-condemning emotions.

## 6.2. Theoretical Implications

By investing the role of cognitive process and emotional responses as instigators of consumer positive WOM toward corporate environmental actions, the present research makes the following several contributions to the study of green consumption.

First, the current research unveils an interesting phenomenon that not all of corporate environmental actions could win a consumer's favor, which scholars usually ignore. We divide the corporate environmental actions into two categories (substantive vs. symbolic) based on institutional theory. Past studies have mainly focused on whether corporations performing their environmental responsibility [16], which shed light on understanding consumer responses to the issues of corporate environmental responsibility. However, by contrast with the previous studies, our investigation argues that an individual's perception of environmental actions should vary, in other words, consumers may be not willing to pay for all environmental actions especially when companies start to communicate their engagements in reducing the environmental imprint by excessively stressing green commitment rather than their real green efforts.

Second, this study contributes to the literature by highlighting the mechanism of "hot" emotional process in terms of corporate environmental actions. Although extensive research into moral emotions involving CSR has provided us with considerable insights, the focus of moral emotions in more detail, namely the corporate environmental issues, is still somewhat scarce [15,16,19]. Our research proposes and empirically tests a mediation model involving other-condemning emotions based on the social intuitionist model, and we found that other-condemning emotions mediate the relationship between corporate environmental actions and consumer positive WOM, whereas the mediating role of greenwashing perception is not significant when other-condemning emotions is included in the model. The findings show that cognitive response, namely the "cold" cognitive process, may be not an intuitive reaction when exposed to ethical dilemma [13], whereas moral emotions are more automatic and generic [14]. We hope that our findings could arouse scholars' attention to moral emotions in terms of corporate environmental responsibility.

Third, this is the first study to the best of our knowledge in the literature addressing business ethics to examine an individual's psychological mechanism in terms of cognitive and affective processes based on CAPS. This theory focuses on the individual's internal psychological mechanism between external stimulus and individual behavioral reactions, which has been examined in various contexts, such as personality pathology [69], racial relations [70], interpersonal relationship within organizations [71], and customer loyalty [72]. However, few scholars research and examine this theory in the context of business ethics. The present research contributes to extending CAPS into a new realm, namely, the literature addressing business ethics. This study confirms that both cognitive process and emotional process could be operative in a moral context and there is a serial mediating effect of both cognitive unit and affective unit within an individual's inherent psychological mechanism. Meanwhile, our findings echo the prior studies that there is a great need to integrate both the cognitive process and emotional process in understanding consumer responses toward corporate environmental actions. This study helps scholars to expand CAPS to other related issues.

### 6.3. Managerial Implications

First, the present research indicates that consumers tend to react more positively to corporate substantive environmental actions than symbolic actions. Consumers usually consider the symbolic engagements as a marketing tool which sells its corporate image as being green. In one sense, consumers expect not symbolic actions, but substantive environmental actions which create new environmentally friendly products and prevent corporate production processes from exerting adverse effects on the environment, such as process-driven and product-driven environmental engagements. Therefore, it is significant for managers to pay more attention to the ways of undertaking environmental responsibility. It should be noted that in the literature addressing the circular economy, scholars have proposed that sustainable consumption and production (SCP) tools which provide a series of useful environmental tools and instruments to realize the sustainability of production and consumption modes could be fundamental to settle environmental issues substantively and boost circular economy practices, such as the environmental management system, ecodesign directive, environmental technology verification and so on [1]. Accordingly, practitioners could implement substantive environmental actions by SCP tools. On the other hand, the regulatory attempts of corporate environmental actions and green claims vary greatly among different countries, and their enforcements of regulation are still limited [73]. For example, the government supervision of corporate environmental information disclosure is relatively insufficient in developing countries, especially in China [74]. Given our findings, we believe that establishing global environmental regulations and a standardized environmental information disclosure system could contribute to decreasing the harm to consumer-based equity. Meanwhile, a series of strong and rigorous regulations of symbolic environmental actions are quite necessary. Retailers and advertisers should be bound by laws to provide consumers with corporate transparent and authentic environmental information. Moreover, some scholars suggested that firms in traditionally polluting industries are susceptible to facing a charge of greenwashing, and consumers are at a disadvantage in terms of information seeking (e.g., there are no credible ways to verify corporate environmental claims). In addition to increasing the supervision of polluting industries, on the one hand, social media is likely to be a useful channel which could redefine the informational flow between consumers and firms in tackling the issues of environment, which enable two-way communication. Consumers could leave their comments on a firm's official website or blogosphere to scrutinize corporate environmental actions, and thereby decrease the occurrence of symbolic actions. On the other hand, an ecolabel or energy label based on environmental multi-criteria released by an external authoritative third-party aims to provide consumers with reliable and detailed information, which is conducive to decrease corporate greenwashing and drive greener consumption [2].

Second, the mediating role of other-condemning emotions between corporate environmental actions and consumer-positive WOM suggests that the importance of emotional process in consumers' interpretation and perception of corporate environmental actions, on which managers should focus. Existing literature has indicated that emotions profoundly influence social information processing, and individuals are compelled to cope with certain feelings of emotion when exposed to it. Accordingly, consumers would not only give full vent to their other-condemning emotions, but also focus more on how companies settle environmental issues. By this logic, preventing the occurrence of symbolic actions from exerting other-condemning emotions is the first priority for firms to lessen negative consequences. In addition, once symbolic environmental actions occur, on the one hand, marketers should take timely and appropriate remedies to decrease the negative backlash damaging the corporate marketing campaign. For example, companies could make sincere apologies through social media or take an array of substantive remedial actions. They could also put forward a series of reasonable and credible solutions which place 'environmental, green and ecological' responsibility at the core of their corporate positioning strategy to re-win consumers' favor. On the other hand, the previous literature proposed that emotion could be a fundamental and intrinsic response to environmental issues compared with

cognitive perception since, in general, individuals have emotional affinity to the natural environment and emotions are highly correlated with ecological protected creed [75,76]. For example, Meneses (2010) [75] indicated that recycling behavior is associated more with positive emotions than with cognitions (cognitions play a minor role in recycling behavior), and a certain degree of affection may be the best step forward in the recycling adoption process. Accordingly, the significant role of emotions in environmental research should be highlighted by scholars. Our results of a paired *t*-test on other-condemning emotions by different experimental groups indicated that disgust is more significant than contempt when in the context of corporate symbolic environmental actions. By this logic, we argue that it would be significant for practitioners to pay attention to avoiding arousing consumer's disgust and contempt emotions when they deliver corporate symbolic environmental actions.

#### 6.4. Limitations and Future Research

There are several limitations to this study, which suggest directions for further research. First, although the stimulus materials were developed based on media reports of corporate symbolic and substantive environmental actions and we made some slight modifications according to the recommendations of three experts, some researchers have suggested that video records of actual environmental actions by corporations would be better stimuli which provide participants with vivid examples. Accordingly, future studies could use video recordings as stimulus materials.

Second, moral emotions could direct retailers and advertisers to focus on the emotionality of consumers in term of corporate environmental engagements. Pooley and O'Connor (2016) indicated that emotions are more significant than environmental claims provision in developing a consumer's pro-environmental attitudes [77]. The present research merely verifies the mediating role of other-condemning emotions, contempt, anger and disgust in the relationship between environmental actions and consumer-positive WOM. Future studies could examine the relationship between other-praising emotions and other consumer reactions, such as consumer loyalty, purchase intentions and so on. In addition, our findings measure the effect of distinct antecedents on consumer-positive WOM for one time. Thus, there is a need for a longitudinal study to make a judgement as to whether the answers of the same subjects will be similar each time to reveal the relations between variables accurately.

Another interesting direction for future study is to examine the moderating effect of individual or situational differences in the elicitation of greenwashing perception and other-condemning emotions, such as consumer skepticism, moral identity, generativity or corporate reputation. For example, Urien and Kilbourne (2011) found that generativity expresses care and concern for the welfare of future generation, which is positively related with pro-environmental attitudes and ecological behavior intentions [78]. By this logic, consumers with high generativity are more likely to experience more greenwashing perception and other-condemning emotions toward corporate symbolic environmental actions. Future studies could explore the moderating role of the above variables to enrich the existing research.

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## Appendix A

### *Appendix A.1. Substantive Environmental Group*

Wonderful Co. Paper is a paper manufacturer in China, with a complete paper product line which includes tissue, shopping bags and food boxes. In the past few decades, Wonderful Co. Paper has gradually grown to be a leader in the paper-making industry.

In the whole process of production, paper manufacturer not only need to consume a lot of water resources, but also discharge black liquor and white water, which are the most serious pollution for the natural environment and human health.

However, through the introduction of advanced sewage disposal equipment and the construction of a high-standard sewage treatment station, Wonderful Co. Paper has achieved the balance between environmental protection and efficiency. The reporter learned from the firm's manager that Wonderful Co. Paper purchased and constructed a sewage treatment station with a value of 10 million yuan from abroad to carry out biological treatment on the sewage in the plant area, and sent it to the second sewage treatment plant for deep-sea discharge after reaching the national first-class discharge standard. Through this technology, the water consumption per ton of paper can be controlled below 10 tons. Wonderful Co. Paper believed that promoting the sustainable development of the environment and reducing the harm of the production process to the environment is their responsibility. After the adoption of new technology and new equipment, the environmental monitoring indexes such as water consumption per unit GDP and chemical oxygen demand (COD) emission intensity of Wonderful Co. Paper have obviously exceeded the relevant national regulations. These improvements will make an important contribution to the river protection and water quality in the area where the company is located.

### *Appendix A.2. Symbolic Environmental Group*

Wonderful Co. Paper is a paper manufacturer in China, with a complete set of paper product line which includes tissue, shopping bags and food boxes. In the past few decades, Wonderful Co. Paper has gradually grown to be a leader in the paper-making industry.

In the whole process of production, paper manufacturers not only need to consume a lot of water resources, but also discharge black liquor and white water, which are the most serious pollution to the natural environment and human health.

The reporter learned from the firm's manager that in view of the increasing concern of the public and the government on environmental issues, Wonderful Co. Paper launched a series of "Earth Hour" environmental protection activities to its partners, shareholders and all sectors of society as a symbol of its commitment to green environmental protection. Specifically, the company makes full use of the wall-newspaper to publicize environmental knowledge and improve everyone's awareness of environmental protection. In addition, on 27 and 28 March, teachers and students from three local middle schools and universities were invited to visit the company's headquarters. During the visit, the company representatives showed the students and teachers the company's future environmental protection plan and green commitment. Through active participation of 'Earth Hour' activity, Wonderful Co. Paper enhanced public awareness of environmental protection and significantly increased its social impact.

## Appendix B

**Table A1.** Measurement scales and construct items.

Manipulation Check for Environmental Actions (Li et al., 2017) [5]
<ol style="list-style-type: none"> <li>1. To what degree does such environmental action improve the environmental problems?</li> <li>2. To what degree does such environmental action change the firm's production process and management system?</li> </ol>
Greenwashing Perception (Chen and Chang, 2013) [62]
<ol style="list-style-type: none"> <li>1. This firm aims to improve its reputation by presenting itself as an environmentally friendly organization.</li> <li>2. This firm possesses a green claim that is vague or seemingly un-provable.</li> <li>3. This firm overstates or exaggerates how its green functionality actually is.</li> <li>4. This firm leaves out or masks important information, making the green claim sound better than it is.</li> <li>5. This firm has hidden intentions and interests.</li> </ol>
Other-Condemning Emotions (Xie et al., 2015) [16]
<ol style="list-style-type: none"> <li>1. Contemptuous.</li> <li>2. Scornful</li> <li>3. Disdainful</li> <li>4. Angry</li> <li>5. Mad</li> <li>6. Very annoyed</li> <li>7. Disgust</li> <li>8. Feeling of distaste</li> <li>9. Feeling of revulsion</li> </ol>
Positive Word-of-Mouth (Harrison-Walker, 2001) [61,79]
<ol style="list-style-type: none"> <li>1. I mention this firm to others quite frequently.</li> <li>2. I seldom miss an opportunity to tell others about this firm.</li> <li>3. When I tell others about this firm, I tend to talk about the firm in great detail.</li> <li>4. I have only good things to say about this firm.</li> <li>5. I am proud to tell others that I use this firm's product.</li> </ol>
Environmental Attitude (Leonidou and Skarmeas, 2017) [63,64]
<ol style="list-style-type: none"> <li>1. I am concerned about environmental issues.</li> <li>2. I think that environmental issues are important.</li> </ol>

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