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How to Regain Green Consumer Trust after Greenwashing: Experimental Evidence from China

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Abstract: Greenwashing leads to consumer skepticism of all green products as well as doubts about company claims regarding sustainability. However, the understanding of how to regain green consumer trust after greenwashing is rather limited. The authors fill this gap by exploring the psychological process of green consumers following intervention strategies designed to reduce greenwashing. We collect and interpret quantitative data from two psychological experiments, the first experiment identified two types of intervention strategies that serve to counter the negative impact of greenwashing and based on our findings from the first studies, we proposed and tested the moderating effect of two factors—implicit beliefs of consumers and companies who implement intervention strategies after greenwashing. The results indicate that distrust regulation (quantifying a product's green attributes) and trustworthiness demonstration (visualizing environmental behaviors) are effective intervention strategies that can enable consumers to re-evaluate the cost-benefit of green products, and which may serve as critical psychological factors for green consumers and contribute to the degree of trust. Validation and comparative study of the derived results show that distrust regulation, followed by trustworthiness demonstration, has the best effect on increasing green trust after intervention. If the sequence is reversed, the effect of the intervention strategy is worse than if only one strategy had been applied. The implicit beliefs of green consumers play a moderating role between intervention strategies and reconsideration of the cost-benefit of green products. The behavior of genuinely green companies and the incremental beliefs of consumers can promote the intervention effect after greenwashing. Alternatively, the behavior of greenwashing companies can easily counter these effects. These findings contribute to knowledge about which psychological factors can promote or hinder the effectiveness of an intervention.

Keywords: intervention strategies; the consideration of reattempted cost-benefits of green products; implicit beliefs; subjects who implement intervention strategies

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1. Introduction

Greenwashing leads to consumer skepticism of all green products as well as doubts about company claims regarding sustainability. However, the understanding of how to regain green consumer trust after greenwashing is rather limited. Greenwashing occurs when companies label products as green and then deliberately exaggerate or even fabricate the environmentally conscious attributes of their products, with the ultimate goal of generating higher profits [1–4]. Due to the deceptive and ambiguous characteristics of greenwashing, government and marketing regulators are slow to identify and determine whether a company is greenwashing.

Greenwashing contributes to consumer skepticism of all green products as well as the claims of sustainability of the company [5,6]. As a result, genuinely green companies have a hard time competing because so many companies greenwash in the lucrative green

market [7–9]. The result is that the whole market loses the benefits of being genuinely green [10–12].

Despite the potential impact of greenwashing in the marketplace, knowledge about its effects is rather limited. There is little theoretical research that addresses how consumers process information related to greenwashing and how companies develop strategies to combat its negative effects. Literature on trust crisis management has examined this problem to some degree but has not converged on a unifying theoretical framework. One underlying assumption in the literature is that greenwashing is almost always devastating [13]. For example, one psychological experiment shows that the impact of greenwashing has a negative effect which outweighs any marketing effects. Green consumers respond to a company that is determined to be involved in greenwashing (by government or regulators) in a negative or even defensive manner [3,14–17].

Case studies have been used to derive conclusions about which strategies work and which do not to work to combat the effects of greenwashing [16,18,19]. These studies, however, provide little direction for understanding the problem from a theoretical perspective. Current research presents a framework for crisis management based on the study of some companies in crisis situations. Recommendations to address the issue include apologies [19], denial [13], making a commitment for the future [18], or a combination of denial, commitment, and other legitimacy strategies [16,20]. These are proposed without any attempt at understanding how consumers process greenwashing and any factors that might serve to moderate the effects of greenwashing on regaining consumer trust. This paper examines effective strategies for regaining green consumer trust. It validates the effects on reconsideration of the cost-benefit of green products and the degree of trust regained after intervention.

In exploring consumer behavior and the internal cognition of consumers when they are presented with strategies of intervention after greenwashing, some scholars have turned their attention to the field of psychology and the use of attribution theory [21–23]. This theory suggests that consumer judgements about the causes of the negative behaviors of a company will damage consumer trust and that companies should, therefore, adopt targeted strategies to help consumers to reestablish positive expectations. Current research in attribution theory provides a good theoretical basis but ignores some important issues. The role of the individual consumer and the positive psychological factors that lead them to regain trust have not been thoroughly examined. There is still a gap regarding which kind of psychological factors lead to reducing the negative effects of greenwashing and how those factors contribute to regaining green consumer trust through intervention strategies.

Apart from existing research, which has assumed a homogeneous consumer response to greenwashing, this study argues that the implicit beliefs of green consumers and the companies that implement intervention strategies can moderate the effects of greenwashing and the degree of green trust regained after greenwashing. Recent studies on consumer trust and greenwashing have produced inconsistent results. Some studies indicate that greenwashing appears to reduce the intention of green consumers to buy green products, increase their skepticism, and even cause them to boycott or abandon specific products entirely [24]. However, others have found that greenwashing does not damage the trust of all consumers [6,25], and that even after greenwashing, some consumers actively seek out positive information that would support their initial sentiment of trust. Most of the current research has focused on the state of consumer trust after greenwashing but has failed to explain the psychological causes underlying these responses.

This study contributes to the literature in three ways. The paper focuses on two kinds of intervention strategies and their effectiveness in regaining green consumer trust after greenwashing: distrust regulation (quantifying the green attributes of a product) and trustworthiness demonstration (visualizing environmental behavior). Current research on trust crisis management has proposed several coping mechanisms that consumers adopt when confronted with unethical marketing behaviors, but there is no evidence to support their effect on the trust of green consumers. We verify that the positive effect on green

trust is higher when the sequence of distrust regulation is implemented and followed up by the trustworthiness demonstration. If the sequence is reversed, however, the effect of the combined intervention strategies is worse than if either strategy is implemented. In the case where only one strategy is implemented, trustworthiness demonstration is more effective than distrust regulation.

This study also extends prior research by exploring the psychological processes that green consumers experience as they experience the intervention strategies. Previous research looks at intervention strategies and their results only once the intervention has run its course; the positive psychological factors that lead to green consumers regaining trust and their experiences in this process cannot be determined. Our study aims to address this gap and explore the mindset of consumers after they have been exposed to greenwashing, but throughout the course of the intervention to rebuild trust. This paper reveals the intricacies of the process by exploring the mediating role of reconsideration of the cost-benefit of green products between intervention strategies and their results. We identify that green consumers set a resistance threshold after becoming conscious of greenwashing, but this threshold can be overcome by consumers reconsidering the cost-benefit of green products.

This study is the first to demonstrate that the effectiveness of intervention strategies in increasing green consumer trust after greenwashing depends on a range of conditions linked to: (1) the implicit beliefs of consumers (incremental beliefs vs. entity beliefs), and (2) companies implementing intervention strategies (genuinely green companies vs. greenwashing companies). Our results show that companies implementing intervention strategies and the implicit beliefs of consumers have significant moderating effects on the reconsideration of the cost-benefit of green products. The effects of intervention strategies on green trust are enhanced when applied to consumers with incremental beliefs when genuinely green companies implement these strategies. The same strategy implemented for green consumers with entity beliefs generated fewer positive results. The combination of genuinely green companies who implemented intervention strategies and incremental-belief consumers can promote the intervention effect after greenwashing and enhance the mediating effect of reconsideration of the cost-benefit of green products. Our findings also contribute to knowledge of the psychological factors which may promote or hinder intervention effectiveness in the process.

2. Conceptual Foundation

2.1. Green Trust

Trust is defined as the level of confidence one has in the anticipated behavior of another party [26]. As opposed to trust, green trust is more specifically defined as the willingness to depend on a product or service based on the belief or expectation resulting from its credibility, benevolence, and ability related to environmental performance (Chen, 2013b; Chen et al., 2020) [27,28]. Therefore, green trust refers to a consumer belief that a company is committed to sustainability and their positive attitudes towards the green products or services offered by the company [29–32]. Recent studies have explored green trust based on perceived green value derived from the quality of green products and services. They describe what takes place when consumers identify the environmental value of products or services as credible and benevolent [33,34]. Green trust is an important driver of green product adoption because of the high level of risk and skepticism among consumers regarding the environmental performance claimed by companies. Consumers who trust claims related to health, reliability, and environmental standards are believed to express positive attitudes and behaviors towards these products and brands [28]. Trust in the green attributes of products induces a lower perceived risk, removes barriers to purchasing these products, and increases consumer brand loyalty, equity, or attachment [33]. Hameed and Warris (2018) [35] argue that eco-labels that provide information about green products increase green brand trust and, in turn, lead to more environmentally conscious

behaviors. Consumer trust affects purchasing behaviors which makes trust an invaluable commodity for green brands.

2.2. Strategies for Enhancing Trust among Green Consumers: Intervention Approaches and Techniques

Green consumers undergo a cognitive reappraisal of green products following a breach in their trust, with a tendency to privilege negative evidence over positive evidence [36,37]. During this fragile period, consumers are strongly motivated to avoid risk and are hypervigilant, as they then anticipate future untrustworthy behavior on the part of green companies. Thus, the primary objective of any trust repair process is to overcome these salient negative expectations and to restore confident positive expectations about green purchases in the future [37,38]. Two complementary intervention strategies that underlie the repair of green consumer trust include distrust regulation and trustworthiness demonstration.

Distrust regulation attempts to overcome green consumer distrust by confidently confronting negative expectations [39] with the expectation of greenwashing action [40]. Regaining trust is much more difficult after repeated greenwashing than after an initial failure [41]. Distrust regulation involves implementing sufficient regulatory controls to prevent or constrain green companies from acting in ways that could lead to greenwashing, including the removal of incentives that may encourage greenwashing behaviors. These legal remedies [42,43] can include green certification and environmental protection information disclosure [44–46]. Under market information asymmetry, green consumers struggle to determine whether products that claim to be green are truly green, so ratings launched by a public association such as Greenspace, TerraChoice, or CSR-China have a powerful effect on the credibility of green consumers [47,48] and can also prevent misleading labels from affecting the whole green product market. Green companies disclose quality environmental information to promote positive perceptions of their companies and brands [49,50], such as inviting green consumers to test the carbon footprint of a green product [51], providing a free trial of a new green product [52,53] or by offering carbon-offset accounts for them, as in the case of Ant Forest [54]. Research suggests that these strategies can significantly enhance and repair perceived trust [42,48], particularly when introduced voluntarily rather than being imposed externally by government or regulators [55–57]. When interventions are imposed (e.g., by the government), compliance may be attributed to the desire to avoid sanctions, raising concerns that the green company may try to get around or attempt to weaken the imposed constraints. In contrast, a voluntary effort is seen as an expression of the green company itself, implying that it has learned a lesson and is intrinsically committed to its ability to act differently [55,58].

Trustworthiness demonstration refers to the actions involved in overcoming the negative expectations and distrust of green consumers. This process is essential in regaining trust but is not sufficient in itself. It is also necessary to restore positive expectations [13,37] and a sense of good faith and fair dealing [59]. This second intervention strategy refers to the positive promotion of renewed trustworthiness through behaviors that actively demonstrate the commitment and integrity of the company. This intervention includes participating in green economic forums, climate summits, and social responsibility ratings that demonstrate a commitment to protect public welfare and support the building of green communities [35,60,61]. Hence, intervention is distinct from distrust regulation since it focuses on both symbolic and actual displays of positive trustworthiness, rather than on negative behaviors related to the cause of the failure [21,49]. Some charity events of green companies add a symbolic feature for green products, which is good for improving green consumers' psychological satisfaction and perception of green consumption utility [56,62]. At the same time, if green consumers would assume an intervention that a green brand may adopt, the more the actual intervention strategies adopted by green companies are consistent with their expectations, the lower the degree of green consumer trust damage will be [63]. The environmental protection signal released in official or formal venues are considered to enjoy high credibility among green consumers. It would reduce the possi-

bility of being deemed as a negative brand and gain strong goodwill from the media and social public [64]. The combination or superposition of the intervention strategy is good for green consumers to build up a connection between the visible trustworthiness strategy adopted by green companies from more abundant dimension and their initial trust [22,65]. This trustworthiness strategy is complementary to distrust regulation, since information released by an official body is treated as highly credible among green consumers, reducing negative brand image and fostering goodwill from the media and public. Based on this, we propose hypothesis H1a:

H1a. *After green consumers notice greenwashing, distrust regulation (quantifying the green attributes of products) and trustworthiness demonstration (visualizing environmentally protective responsibility) increase the regaining of green trust after their implementation.*

Further, we carry out a comparative analysis on the effect among different sequences of two intervention strategies on the regaining of green trust. From the process of green trust building, the initial trust of green consumers comes from the green attributes of products [65]. Most consumers only buy green products of reasonable premiums and good quality, and their initial purchases are mostly made due to the marginal value brought by products' green attributes, such as energy savings or a long service life [66]. After learnt about greenwashing of the product or their claimed green attributes, distrust regulation mitigates the superposition and accumulation effects of negative spillovers of damaged trust and buffers the breadth and depth of the negative effects of greenwashing [64]. When green consumers gradually formed their fixed purchasing habits and considered green purchasing behavior as a long-term psychological investment [2], compared to the initial trust that comes from the green attributes of products, they tend to believe that green enterprises would handle problems in a positive way, and they believe that green companies support green consumers and think more about them, so the trustworthiness demonstration adopted by such companies has a higher likelihood of forming their positive expectation. Based on this, we propose hypothesis H1b:

H1b. *The degree of green trust regained following a strategic intervention is greater when distrust regulation is implemented first, followed by a trustworthiness demonstration.*

2.3. The Mediating Role to Overcome Psychological Threshold

Once green trust has been violated, concerns about further transgressions and unconscious influences, such as confirmation bias, which can deter green consumers, encourage consumers to maintain a sense of mistrust until and unless they are provided sufficient reason to change their perspective [67]. Genuinely green or greenwashing companies may make several attempts to regain consumer trust, but the consumer ultimately sets the threshold of what is considered an adequate response [65]. Indeed, even in cases where green consumers desire to repair their trust in the green companies, they must do so in ways that are sufficient to overcome their own resistance. Research suggests that the resistance threshold can be overcome, to some extent, by reconsidering the cost (reduction of retry costs) and benefit of green products [62,68–70]. In this case, the costs would refer to the actual cost of the green products in store. Free trials of a green product or a carbon-offset account can be identified as credits to offset the premium incurred by the selection of a green product [52,71]. The benefits here can be either symbolic or functional, and refer to the desire of a consumer to remain a green consumer even after they have experienced greenwashing [47]. Carbon labels and green certifications, which are functional benefits, strengthen the psychological expectations of green consumers with regards to brand effects and enhance their tendency to trust green products and brands [72]. More symbolic features, such as a company's efforts to host charitable events, can improve psychological satisfaction [7,65,73–75]. If a green consumer can see an increase in benefits in excess of what they initially expected, then the perception of cost is reduced, and it is likely that

trust will be rebuilt, and the perceived risks will decrease [62]. Based on this, we propose hypothesis H2:

H2. *After green consumers notice greenwashing, the reconsideration of the cost-benefit of green products have a mediating effect on intervention strategies and the degree of green trust regaining following a strategic intervention.*

2.4. The Moderating Role of Implicit Beliefs

Although recent research has begun to explore wide individual variations—some green consumers refuse to give transgressors a second chance, while others are very receptive to trust-recovery efforts [76]—little prior work has considered what factors might affect regaining trust after greenwashing. A critical factor that influences whether green consumers are receptive to efforts made to regain their trust is their implicit belief system, which we classify as entity beliefs and incremental beliefs. Green consumers with entity beliefs are likely to view greenwashing information as more indicative of the company than green information about the brand [67,77]. After experiencing a trust violation, green consumers with entity beliefs may be more skeptical of, and insensitive to, efforts to regain their trust, which means they are more reluctant to retry green products even after intervention strategies.

Green consumers with incremental beliefs, conversely, are likely to engage in processing greenwashing information. They may be expected to counterargue greenwashing information more extensively, and, therefore, resist changing their attitude and response to greenwashing information [56]. In addition, they are expected to show attitudinal shifts in the direction of advocacy when a message portrays their favored brand in a positive light. Because of their high level of attachment to the brand, they are less likely to accept greenwashing information as more diagnostic [36]. As a result, they may perceive efforts of regaining their trust (e.g., quantifying the green attributes of products, visualizing environmentally protective responsibility) as sincere [78]. Under intervention strategies, they are more likely to overcome the resistance threshold they have set to reconsider the cost-benefit of green products. Based on this, we propose hypotheses H3a and H3b:

H3a. *Green consumers with implicit beliefs about a company have a moderating effect on the relationship of intervention strategies and reconsideration of the cost-benefit of green products.*

H3b. *Compared to green consumers with entity views, those with incremental views will strengthen the relationship of intervention strategies and the reconsideration of cost-benefit of green products.*

2.5. The Moderating Role of Companies Who Implement the Intervention Strategies

In the common interests of the green industry, both greenwashing companies and genuinely green companies should make efforts to regain green consumer trust after greenwashing [63,79,80]. Objectively identical firm responses may have substantially different impacts on green trust after the intervention depending on the prior expectations of consumers. Research has shown that the interpretation of evidence is affected by the prior expectations of consumers [64,81,82]. There are contradicting opinions considering the hypothesis that evidence consistent with prior positive evaluations leads to more positive evaluations than positive evidence alone [1]. In this study, we propose two different subjects of investigation: genuinely green companies who implement intervention strategies following greenwashing and greenwashing companies and the influence of both on consumer response [83]. If the environmental performance of a company has deteriorated, its credibility shrinks, and further environmental actions likely invoke skepticism among the general public [84,85]. When green consumers are processing the message of an intervention strategy implemented by greenwashing and genuinely green companies, negative

framing is more effective than positive framing. Based on this, we propose hypotheses H4a and H4b:

H4a. *Companies who implement intervention strategies (genuinely green companies* vs. *greenwashed companies) have a moderating effect on the relationship of intervention strategies and the reconsideration of the cost-benefit of green products.*

H4b. *Compared to greenwashing companies, genuinely green companies strengthen their relationships with green consumers to approve their benefits while reconsidering of green products.*

We argue that the robust regaining of consumer trust involves a psychological process about how to intervene, the cost-benefit balance under intervention strategies, and the conditions that moderate this relationship. We describe how intervention strategies (distrust regulation and trustworthiness demonstration) underlie trust-regaining actions. Figure 1 shows a conceptual model of how to regain green consumer trust after greenwashing.

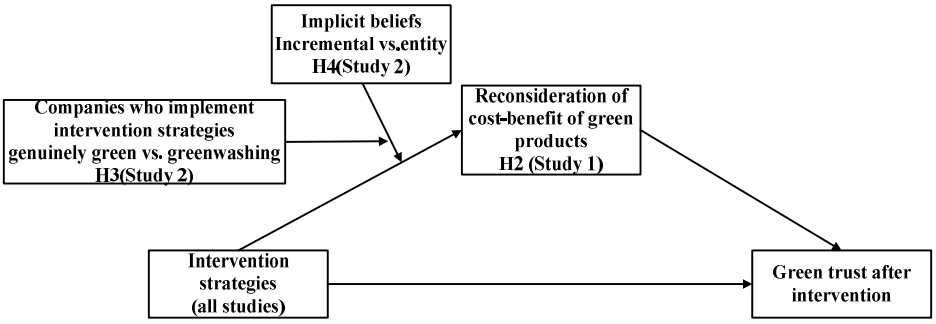

Figure 1. Conceptual framework.

3. Experimental Design and Hypothesis Verification

In two studies, the differential responses to the greenwashing of green consumers were tested, and the psychological processes responsible for these effects were delineated. The first experiment identified two types of intervention strategies that serve to counter the negative impact of greenwashing. The effectiveness of these strategies is determined by the level of reconsideration of the cost-benefit of green products by consumers and serves as an indicator of green trust after the intervention. Based on our findings from the first studies, we proposed and tested the moderating effect of two factors—implicit beliefs of consumers and companies who implement intervention strategies after greenwashing. We then discuss the implications of the findings for marketers of green products.

Green consumers were defined as those who purchased more than 5 categories of green goods. The reason for selecting 5 categories is that the per capita sales of green basket goods show an accelerated growth rate when the consumer goods category is larger than 6, while it shows a more stable growth rate when it is smaller than 6 [86]. Among them, we identified green products by keywords with the attribute of greenness, such as green care products, greenhouse supplies, green clothing, organic food, and green home appliances. We took on-the-job MBAs as our experimental subjects. One reason for this is that they tend to have higher and more stable incomes (most of them are functional or line manager in a company, and they take courses of an MBA in their spare time), consumption habits, and preferences, and they also have some knowledge about green consumption. Another reason is that we could conduct our experiments on-site as on-the-job MBA students take their courses on weekends at a university in Tianjin. There are more than 10,000 MBA students available to take part in our experiments, which increases the reliability of our scenario-based experiment.

A prerequisite established for product selection was the familiarity of the consumer with the product in question, as well as the degree of influence of greenwashing on regaining consumer trust [5] (See Appendix A for the specific questionnaire). Based on these

criteria, with 50 MBAs as our subjects to take part in the pre-test, we selected 4 of the 18 available products that they were most familiar with: namely, a fluorine-free refrigerator (M = 2.27, on a five-point scale), recyclable tissue paper (M = 2.47), a degradable lunch box (M = 2.37), and LED environmental lighting (M = 2.6). The results of the effect of greenwashing on the trust of subjects are as follows: LED lights (M = 3.67), recyclable tissues (M = 3.4), degradable lunch boxes (M = 3.37), and fluoride-free air conditioners (M = 3.03). Therefore, we chose the LED lights with the highest probability of purchase (M = 2.6) and the highest degree of the effect of greenwashing on the trust of the subject (M = 3.67) as our experimental product.

3.1. Variable Development and Their Measures

3.1.1. Intervention Strategies

We constructed a comparison between common bulbs and LED bulbs. After presenting the advantages that green products can bring about, we presented the control group with "Scenario of greenwashing of Company TT". We then asked subjects to complete "Scale of Reconsideration of Cost-benefit of Green Products" and "Scale of Green Consumer Trust after Intervention", while we presented the environmental group the "Scenario of Greenwashing of Company A", "Intervention strategies1"/"Intervention strategies2"/"Intervention strategies1" + "Intervention strategies2"/"Intervention strategies2" + "Intervention strategies1", and then asked them to complete "Scale of Reconsideration of Cost-benefit of Green Products" and "Scale of Green Consumer Trust after Intervention". Intervention strategies 1 included prefatory trials, self-inspection of the greenwashed LED bulbs, carbon footprint marks labeled on the bulbs, etc. Intervention strategies 2 included "make carbon emission project videos", "take part in industrial conferences, forums, and summits", "community donation", and "investment in the refurbishment of natural-based projects" (See Appendix B for the descriptive texts).

3.1.2. Reattempted Costs and Benefits

We extracted six indicators to measure this variable, three of which measured the reduction of consumers' reattempted costs (R1, R2, R3), and three which measured the improvement of green benefits (R4, R5, R6). The scale had good reliability and validity, where the normalized factor loadings were all greater than 0.9 and the Cronbach's alpha coefficient was 0.975 (See Appendix C for specific scale items, as well as the results of the reliability and validity verifications).

3.1.3. Implicit Beliefs

Molden and Dweck (2006) [87] identify implicit beliefs through descriptive materials of a fictional corporation. In conjunction with this finding, participants were asked to read two articles that we composed about the impact of public opinion on greenwashing enterprises prior to the start of the experiment, which was intended to bring them into the experiment more quickly, but also stimulated the incremental beliefs or entity beliefs of the implicit beliefs of the subjects. The titles of the two articles were "Companies can correct their greenwashing behaviors under the pressure of public opinion" and "It is still difficult for companies to change their greenwashing behaviors even under the pressure of public opinion" (Appendix D contains the descriptive articles). After reading these articles, consumers were asked to answer a short question: "To what extent will companies correct their greenwashing behaviors?" Participants were asked to scale their answers from 1 to 9, with 1 being "Very unlikely", and 9 being "Very likely".

3.1.4. Companies Who Implement Intervention Strategies

To distinguish between the companies who implemented intervention strategies, we constructed two fictional companies to represent the manufacturers of LED bulbs through descriptive materials and images. We presented the Control Group with two documents, "Scenario of Greenwashing of Company A", "Scale of Reconsideration of the Cost-benefit

of Green Products", and "Scale of Green Consumer Trust after Intervention". We presented the Environmental Group the "Scenario of Greenwashing of Company A", "Scenario of Genuinely Green Company B" in the same industry, "Scale of Reconsideration of the Cost-benefit of Green Products", and "Scale of Green Consumer Trust after Intervention". (Appendix E contains the descriptive articles). After reading the articles, consumers were asked to complete the scale measuring reconsideration of cost-benefit of green products and green trust after the intervention.

3.1.5. Green Trust after Intervention

We used five indicators to measure consumers' level of green trust after the intervention [88–90]. Among them, two indicators measured consumer trust in ability of the company (X1, X2), two measured consumer trust in the integrity of the company (X3, X4), and one measured consumer trust in the benevolence of the company (X5). The scale had good reliability and validity, where the normalized factor loadings were all greater than 0.9 and the Cronbach's alpha coefficient was 0.965 (See Appendix C for specific scale items as well as results of reliability and validity verification).

3.2. Experimental Design

3.2.1. Experiment 1

Experiment 1 was used to verify H1a, the impact of different intervention strategies on green consumers trust regaining, H1b, the impact of different sequences of intervention strategies on trust regaining, and H2, the mediating effect of reconsideration of the cost-benefit of green products in the process of trust regain.

A total of 500 on-the-job MBAs (245 females, 255 males, average age 35) from a university in Tianjin were recruited. In order to increase validity, we ensured that all of our subjects were green consumers, but we did not define the psychological attributes of each group in advance. The subjects were randomly assigned to four experimental groups and one control group in equal numbers. In the control group, we provided the subjects with the scenario of greenwashing of LED bulbs. We implemented different trust intervention strategies for each experimental group. Experimental Group 1 was exposed to distrust regulation (quantifying the green attributes of products), Experimental Group 2 was presented with trustworthiness demonstration (visualizing the environmental behaviors of companies). Then, we carried out a comparative study to validate H1b, if different intervention strategies and their implementation sequences have different effects on green trust after intervention. In Experimental Group 3, distrust regulation was implemented first, followed by trustworthiness demonstration and in Experimental Group 4, trustworthiness demonstration was implemented first, followed by distrust regulation. We removed any incomplete questionnaires and collected 494 questionnaires which had been completed in their entirety, for an effective completion rate of 98.8%.

We used AMOS.24 to verify H1 and H2 based on the latent variable characteristics of reconsideration of cost-benefit of green products and green trust after intervention. Based on intervention strategies, data were divided into five categories and brought into the theoretical model to form Model 1 (Control Group + Experimental Group 1), Model 2 (Control Group + Experimental Group 2), Model 3 (Control Group + Experimental Group 3), Model 4 (Control Group + Experimental Group 4), and Model 5 (Control group + all Experimental Groups). We then compared the five models and analyzed them to obtain the verification results.

The first was the goodness of fit verification of Models 1–5. As shown in Table 1, the fit indicator of each model was almost within the effective critical value, among which the absolute fit indicator and value-added fit indicator both performed well. Chisq/df was approximately 4, RMSEA was approximately 0.1, and other goodness of fit indicators (AGFI, CFI, GFI) were approximately 0.8, indicating that these 5 models demonstrate a good fit.

Table 1. Goodness of fit verification.

	Model 1	Model 2	Model 3	Model 4	Model 5
Chisq	367.028	175.185	196.138	220.394	284.52
DF	52	52	52	52	52
Chisq/df	7.058	3.369	3.772	4.238	5.472
GFI	0.795	0.881	0.871	0.846	0.913
AGFI	0.693	0.822	0.807	0.769	0.869
CFI	0.905	0.968	0.946	0.961	0.973
RMSEA	0.177	0.109	0.116	0.128	0.095

We then performed a manipulation check for intervention strategies and the verification results were consistent with H1a; that is, different intervention strategies have different effects on green trust after intervention. The degree of green trust after an intervention is the sum of the scores of each item, with a maximum score of 25. Differences existed in the Control Group (M = 7.55, SD = 1.89), Experimental Group 1 (M = 15.76, SD = 3.07), Experimental Group 2 (M = 19.27, SD = 1.14), Experimental Group 3 (M = 21.52, SD = 1.97), and Experimental Group 4 (M = 10.24, SD = 2.09). Moreover, ANOVA suggested that there are also differences among the different Experimental Groups (F (4,489) = 763.993, $p < 0.001$), which further proves H1a.

To validate comparative study H1b, if different intervention strategies and their implementation sequences have different effects on green trust after intervention, we further compared the differences in path coefficients in Models 1 to 4 and present these results in Table 2. On this basis, every model was verified by limited multigroup analysis, and the results show that P1, P2, P3, P4, P5, and P6 were all less than 0.001, and the change values of NFI, IFI, RFI, and TLI were all greater than 0.1, indicating that the path coefficients of each model are significantly different.

Table 2. Comparison of different paths of coefficients in Models 1–4.

Model 1	Model 2	Model 3	Model 4	Model 5
0.913 ***	0.512 ***	0.505 ***	0.601 ***	0.68 ***
0.265 **	0.074 ***	0.104 ***	$0.080^{0.325}$	0.848 ***
0.652 ***	0.936 ***	0.970 ***	0.582 ***	0.082 *

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Third, as stipulated in H1b, different types and sequences of intervention strategies have different effects on green trust after intervention. We verified that if only one strategy is selected to be implemented, the trustworthiness demonstration (M-trust level = 19.27, total effect = 0.974, indirect effect = 0.038, 95% CI [0.017–0.062]) is better than distrust regulation (M-trust level = 15.76, total effect = 0.894, indirect effect = 0.242, 95% CI [0.077–0.394]). The intervention effect in which distrust regulation is first implemented, followed by the trustworthiness demonstration (M-trust level = 21.52, total effect = 0.977, indirect effect = 0.007, 95% CI [−0.01–0.024]), is better than that in the opposite sequence (M-trust level = 10.24, total effect = 0.601, indirect effect = 0.048, 95% CI [−0.047–0.147]), which means that the sequence in which distrust regulation is implemented first, followed by trustworthiness, had the best effect on green trust after an intervention. The derived results show that if that sequence is reversed, the effect of intervention strategies on green consumers' trust after greenwashing was worse than if either strategy was applied independently.

We then verified the mediating effect of reconsideration of cost-benefit of green products in H2. In the indirect effect verification of each Experimental Group in the model, the indirect effect of Experimental Group 3 and Experimental Group 4 was significant, so the data related to Experimental Group 3 and Experimental Group 4 were entered into Model 5 to further verify the mediating effect. As we predicted in H2, the reconsideration of

cost-benefit is a mediating variable that had a significant indirect effect on green consumers trust after intervention (Total effect = 0.658, indirect effect = 0.576, 95% CI [0.525–0.632]). The path coefficients of the model are shown in Figure 2.

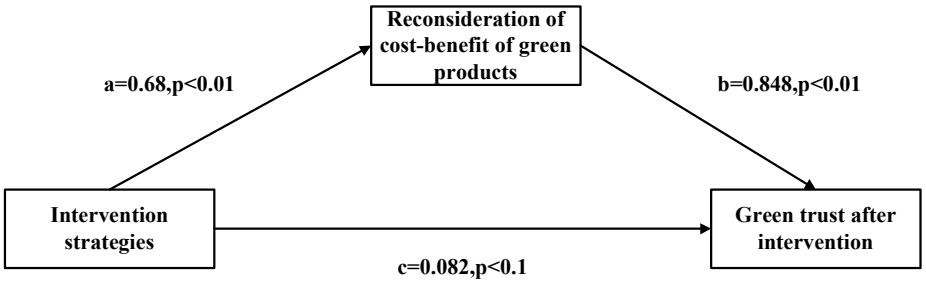

Figure 2. Path coefficients of the mediating effect.

3.2.2. Experiment 2

The purpose of this experiment was to verify the moderating effects of H3a and H3b, which refer to the implicit beliefs of consumers (incremental beliefs vs. entity beliefs) and H4a and H4b, that concern the companies that are implementing the intervention strategies (genuinely green companies vs. greenwashing companies) on the relationship of intervention strategies on the reconsideration of cost-benefit of green products. As Experiment 1 confirms, the most positive impact on a consumer's green trust was observed when implementing the distrust regulation first and followed by the trustworthiness demonstration. We used this sequence in Experiment 2.

A total of 500 on-the-job MBAs (245 females, 255 males, average age 35) from a university in Tianjin were recruited. To increase the external validity of our experiments, we ensured that all of our subjects were green consumers, but we did not define the psychological attributes of each group in advance. They were randomly assigned to four experimental groups and one control group equally. For the control group, we provided the subjects with the scenario of greenwashing of LED bulbs. To be different from Experiment 1, we exposed the Experimental Group to different trust intervention strategies (implementing the distrust regulation first, followed by the trustworthiness demonstration), and designed intergroup experiments to model the two subjects implementing intervention strategies (genuinely green companies vs. greenwashing companies) and two implicit beliefs (incremental beliefs vs. entity beliefs). After removing the unfinished questionnaires, we collected 474 complete questionnaires, with an effective completion rate of 94.8%.

We adopted the multiple regression method to verify the significance of the impact of the interaction terms on the reconsideration of the cost-benefit of green products in order to first verify the effectiveness of the moderating effect. Pursuant to the multigroup analysis using AMOS.24, we assumed that the coefficients were the same under the condition of different moderating variables in order to confirm the effectiveness of their moderating effect.

We first verified the interaction impact of two moderating variables on the reconsideration of the cost-benefit of green products, where the significance level of whether to implement intervention strategies × implicit beliefs, whether to implement intervention strategies × the companies implementing the intervention strategies, and implicit beliefs × the companies implementing the intervention strategies were 2.143 * (1.199), −10.567 *** (1.112), and 7.401 *** (0.906), respectively (Table 3 shows the specific coefficients and significance levels of other variables in the regression model). The change values of Pb1, Pb2, Pb3, Pb4, Pb5, and Pb6 were all less than 0.001, the change values of NFI, IFI, RFI, and TLI were all greater than 0.1, and the path coefficients based on each model were significantly different, which indicates that companies implementing intervention strategies (genuinely green companies vs. greenwashing companies) and implicit beliefs (incremental beliefs vs. entity beliefs) had a significant moderating effects on the reconsideration of the cost-benefit of green products (see Table 3 for verification results).

Table 3. Coefficients and significance levels in the regression model.

Multiple Regression Model for Verification of Moderating Effects (Dependent Variables Are the Reconsideration of Cost-Benefit of Green Products)	
Constant	8.665 *** (0.850)
Whether to implement intervention strategies	15.489 *** (0.973)
Implicit beliefs	−4.050 *** (1.197)
Companies implementing intervention strategies	$-0.881^{0.377}$ (0.998)
Whether to implement intervention strategies × implicit beliefs	2.143 * (1.199)
Whether to implement intervention strategies × companies implementing intervention strategies	−10.567 *** (1.112)
Implicit beliefs × companies implementing intervention strategies	7.401 *** (0.906)

Note: *** $p < 0.01$; * $p < 0.1$.

We then verified the combinations of implicit beliefs (incremental beliefs vs. entity beliefs) and companies implementing intervention strategies (genuinely green companies vs. greenwashing companies) and their impact on the reconsideration of cost-benefit of green products. The manipulation check of mediating effects and the verification results were consistent with H3a and H3b and H4a and H4b; that is, the combinations of implicit beliefs (incremental beliefs vs. entity beliefs) and companies implementing intervention strategies (genuinely green companies vs. greenwashing companies) had a different impact on the reconsideration of the cost-benefit of green products. The degree of reconsideration of cost-benefit of green products (the sum of the scores of each item, with maximum score of 30) varied in different groups. In the Control Group, these values were M = 8.031, SD = 1.790; in the Experimental Group in which the companies implementing intervention strategies were the greenwashing companies and green consumers have entity beliefs, the values were M = 10.711, SD = 3.089; and in the Experimental Group in which the companies implementing intervention strategies were the genuinely green companies and the green consumers have entity beliefs were M = 14.9412, SD = 4.245. Moreover, the values for the degree of reconsideration of the cost-benefit of green products of the Experimental Group in which the companies implementing intervention strategies were the greenwashing companies, and the green consumers have incremental beliefs were M = 22.889, SD = 3.978. Finally, in the group where the companies implementing intervention strategies were the genuinely green companies, and green consumers have incremental beliefs, the values were M = 26.219, SD = 2.883. According to ANOVA, the degree of the reconsideration of cost-benefit of green products varies among different Experimental Groups ($F(4, 469) = 455.786$, $p < 0.001$), which further proved the effectiveness of the control of variables.

We finally verified the combinations of the companies implementing intervention strategies and green consumers with implicit beliefs conducting the moderating effect between intervention strategies and the reconsideration of the cost-benefit of green products. We adopted multi-group analysis and Amos 24 to show the verification results (see Tables 4 and 5). Further, we adopted bootstrap sampling (sample size: 5000, 95% CI) to guarantee the mediating effect of the reconsideration of the cost-benefit of green products in that verification process. Almost all of the path coefficients of each group of moderating variables were significant when $p < 0.01$, and the indirect effect of the model was significant when the confidence interval was 95%, which showed us that under one type of subject—those who implemented intervention strategies (genuinely green companies or greenwashing companies)—green consumers with incremental beliefs enhanced the positive effects of intervention strategies on green trust after intervention (genuinely green companies: 0.964 > 0.729, greenwashing companies: 0.901 > 0.463). At the same time, the path coefficient of the model also supported such verification, and the path of intervention strategies on reconsideration of the cost-benefit of green products showed that incremental beliefs and genuinely green companies 0.975 *** > entity beliefs and genuinely green companies 0.712 ***, and incremental beliefs and greenwashing companies 0.916 *** > entity beliefs and greenwashing companies 0.681 ***.

Table 4. Verification results of mediating effects.

	Incremental Beliefs × Genuinely Green Companies	Incremental Beliefs × Greenwashing Companies	Entity Beliefs × Genuinely Green Companies	Entity Beliefs × Greenwashing Companies
Total effect	0.964	0.901	0.729	0.463
Indirect effect	0.345	0.57	0.361	0.425
Indirect effect 95%CI	[0.045–0.611]	[0.431–0.693]	[0.270–0.480]	[0.332–0.580]

Table 5. Key path coefficients of interaction items.

Incremental Beliefs × Genuinely Green Companies	Incremental Beliefs × Greenwashing Companies	Entity Beliefs × Greening Companies	Entity Beliefs × Greenwashing Companies
0.975 ***	0.916 ***	0.712 ***	0.681 ***
0.354 ***	0.622 ***	0.507 ***	0.624 ***
0.619 ***	0.331 ***	0.368 ***	$0.039^{0.299}$

Note: *** $p < 0.01$.

For the companies implementing intervention strategies, the intervention effect of genuinely green companies on the trust of green consumers is better than that of greenwashing companies, while greenwashing companies enhanced the mediating effect of reconsideration of the cost-benefit of green products. When green consumers had incremental beliefs, the companies implementing intervention strategies that were genuinely green companies (total effect: 0.964, indirect effect: 0.345, indirect effect 95% CI [0.045–0.0611] had a better intervention effect than when the companies implementing intervention strategies were greenwashing companies, while the mediating effect was the opposite. Similarly, if green consumers have entity beliefs and the subject implementing intervention strategies was a genuinely green company (total effect: 0.729, indirect effect: 0.361, indirect effect 95% CI [0.270–0.480]), the intervention was more positive than that if the company implementing the intervention strategies was a greenwashed company while the mediating effect was reversed. This suggests that genuinely green companies and incremental-belief consumers can promote the positive effects of interventions after greenwashing, while greenwashing companies can better stimulate a change in the degree of the reconsideration of the cost-benefit of green products.

4. Conclusions

4.1. Main Conclusions

Our two studies support H1a, H1b, H2, H3a, H3b, and H4a, H4b. The findings suggest that (1) the two types of intervention strategies that serve to counter the negative impact of greenwashing—distrust regulation (quantifying a product's green attributes) and trustworthiness demonstration (visualizing environmental behaviors)—are effective intervention strategies that can enable consumers to reevaluate the cost-benefit of green products, and which may serve as critical psychological factors for green consumers and contribute to the degree of trust. Validation and comparative study of the derived results show that distrust regulation, followed by trustworthiness demonstration, has the best effect on increasing green trust after intervention. If the sequence is reversed, the effect of the intervention strategy is worse than if only one strategy had been applied. (2) The reconsideration of the cost-benefit of green products are mediating variables that have a significant indirect effect on green consumers' trust after intervention, which means that the costs to retry green products or functional and symbolic benefits are sufficient to overcome the resistance threshold of consumers. (3) Implicit beliefs of consumers and companies who implement intervention strategies after greenwashing play a moderating role between intervention strategies and reconsideration of cost-benefit of green products. The effects of intervention

strategies on green trust are enhanced when applied to consumers with incremental beliefs when genuinely green companies implement these strategies. Alternatively, the behavior of greenwashing companies can easily counter these effects. The same strategy implemented for green consumers with entity beliefs generated fewer positive results.

4.2. Managerial Implications

Our findings indicate that quantifying the green attributes of a product and visualizing environmental behaviors are effective at improving green consumers trust after greenwashing. Managers should consider several important factors in this respect. First, managers should make efforts to provide their green products with green certificates from third parties such as the International Standards Organization (ISO14001 [91]). Green consumers are keen to learn about the public quantitative ratings of the greening efforts of a company because they believe that once complete information on corporate green development is disclosed and perceived as credible, they can choose green products without confusion or deliberation. Second, genuinely green companies should make full use of carbon labels to increase transparency and integrity in carbon auditing. A carbon label refers to the greenhouse gas emissions emitted during the whole life cycle of the product, which is marked on the product label with a quantified index to inform consumers of the carbon rating of the product. The implementation of product carbon labels can guide consumers to choose more low-carbon goods. At present, there is no complete and implementable carbon labeling system in China, so greening companies should make efforts to encourage the research and establishment of such a system.

Our findings verified that the sequence of distrust regulation, implemented first, followed by trust worthiness, has the best effect on green trust after intervention. If that sequence is reversed, the effects of both intervention strategies are worse than if either strategy were implemented on its own. In the case of greenwashing among the whole industry or market, managers must keep distrust regulation as the first guidelines in mind, such as inviting consumers to conduct prefatory trials, conducting self-inspection of the green products, and disclosing the carbon emission of each product in a timely manner. Only when managers ensure the legitimacy of their company in the green market can visualizing environmental behavior seem to be convincing. Otherwise, it is difficult for green consumers to trust the reputation or image rebuilt by the companies after greenwashing, or they might even be considered as another kind of greenwashing.

Our study also demonstrates that green consumers' re-evaluation of the cost-benefit of green products plays a mediating role between intervention strategies and green trust after greenwashing. To highlight the benefits of retrying green products for consumers, managers need to consider the reimbursement not only of the green attributes that consumers focus on but also the reputations and social contexts that green products represent. Forms of reimbursement, such as discounts, coupons, and gifts, are a tangible means by which to win back green consumers. However, this strategy involves investing considerable funds in rewards to consumers with incremental beliefs. A form of reimbursement called service reimbursement involving actions such as planting trees to improve air quality or donating to green events may be a more effective strategy. In ordinary operations, unrecyclable materials should be replaced with more sustainable materials through technological innovation and a standardized technique for capturing all relevant data for better green management should be considered. Green consumers worry that a product may still contain harmful chemicals despite claims that they have been reduced. They also worry about whether companies are truly 'going green' and not just advertising based on an expected message. Therefore, green companies should engage in an honest and open dialogue with green consumers to explain their efforts to offer more sustainable products and services.

4.3. Limitations and Areas for Further Research

This study presents a number of limitations that open interesting avenues for further research on regaining green consumers trust after greenwashing. First, while we have

examined two intervention strategies, we cannot assume that our findings can be generalized to all circumstances. Some green consumers do not regain a sense of trust even after interventions. Future work should measure the impact on profits after an intervention strategy and explore other effective strategies.

Second, future work can also explore whether any new moderating factors activate the intervention process presented in this research. We theorize and test the initial trust of green consumers, which is established based on brand loyalty and is verified to be an effective factor in activating renewed cognitive schemas after intervention strategies. This seems to be an important area of future research.

A third limitation of our study lies in its reliance on scenario-based experiments and our use of MBAs to take part in the experiments. While this methodology is frequently used to maximize internal validity, it offers less validity than field data. Given our focus on testing the intervention process designed to regain green consumers' trust after greenwashing, the design we adopted appears to be satisfactory. In the future, we plan to track the results of greenwashing and intervention efforts using questionnaires or interviews with larger and broader sample sizes of green consumers.

As for the limitations of the psychological experiment method, machine learning algorithms have the potential to enhance the performance of the validation and results. EEGs (electroencephalograms) can be adopted in the experiment for more accurate and detailed psychological factors and the process of green consumers after they receive intervention strategies and their green trust rebuilding after greenwashing. More visual psychological experimental methods can enable the tendency to modify and develop theories in consumer psychology and behavior.

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Institutional Review Board Statement: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institution.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in the present paper are available from the corresponding author upon request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A Selection of Experimental Subjects

A Questionnaire on Your Familiarity with Green Products

1. Your gender: A. Male; B. Female
2. Your age: A. 23–30 years; B. 31–40 years; C. 41–50 years; D. above 50 years
3. Your average monthly income: A. 5401–10,000 Yuan; B. 10,001–15,000 Yuan; C. 15,001–20,000 Yuan; D. above 20,000 Yuan
4. Have you bought 5 kinds of goods in the green basket defined by Ali Research (2016)? A. Yes; B. No

Five kinds of goods include green care products, greenhouse supplies, green clothing, organic food, and green home appliances.

Assume you did not have any of the green products up until now; please identify the probability of selecting the green products listed below, which have a premium of 30–50% compared with common products.

Green Products	0–25% (Excluding 25%)	25–50% (Excluding 50%)	50–75% (Excluding 75%)	75–100%
fluoride-free air conditioners				
LED bulbs				
degradable lunch boxes				
recyclable tissues				

Greenwashing occurs when companies label products as green and deliberately exaggerate or even fabricate the environmentally conscious attributes of their products, generating false propaganda and sales with the ultimate goal of generating higher profits (Nick, 2013; Arli et al., 2018; Bhutto et al., 2019) [1–3].

5. If fluorine-free air conditioning is a product of greenwashing, how much does this impact on your trust (1 means no impact, and 5 means the greatest impact):

   1 2 3 4 5

6. If LED bulbs are a product of greenwashing, how much does this impact on your trust (1 means no impact, and 5 means the greatest impact):

   1 2 3 4 5

7. If degradable lunch boxes are a product of greenwashing, how much does this impact on your trust (1 means no impact, and 5 means the greatest impact):

   1 2 3 4 5

8. If recyclable tissues are a product of greenwashing, how much does this impact on your trust (1 means no impact, and 5 means the greatest impact):

   1 2 3 4 5

Appendix B Initiated Text of Intervention Strategies

LED Bulbs vs. Common Bulbs

An LED bulb, as its name implies, saves energy, electricity, and cost with fractional power but high luminous efficacy. Under the condition of invariable illuminance, an LED bulb of 11 W can replace an incandescent bulb of 60 W, and an uprated LED bulb of 85 W can take the place of an incandescent bulb of 500 W or a mercury bulb of 250 W with an energy-saving rate up to 50% to 80%. In addition, an LED bulb is suitable for a wide range of service voltages and can be activated and operated regularly within a voltage scope between 100 V and 265 V with less pollution to the electric network. Furthermore, it is endowed with advantages such as "carbon emissions reduction", natural light (similar to sunlight), and high comfort for eyes by the Product Quality Inspection Bureau. There will not be the phenomenon of frequently flickering lights, and it will not be detrimental to the eyes when one is working or studying under the bulb on a long-term basis. Therefore, the utilization of an energy-saving bulb outperforms using a traditional bulb in terms of both economic benefits and environmental protection.

Product specification:
Price: 19.9 yuan each
Input voltage: 220 V
Rated power: 8 W (it is suggested to replace a
Common bulb of 48 W)
Color rendering index: >90 (of the highest standard)
Lifespan: 5000 h

Product specification:
Price: 5.18 yuan each
Input voltage: 220 V
Rated power: 40 W
Color rendering index: >90 (of the highest standard)
Lifespan: 1000 h

Appendix C Scales of Mediating Variable, Dependent Variable

A Scale of Consideration on Reattempted Costs-Profits of Green Products (Mediating Variable)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
A company provides economic compensation, such as a trial or discount, so I am willing to try the product again. (R1)					
A company provides more detailed product green information to save me time determining whether it is green, making me more inclined to buy its green products again. (R2)					
I think the rectification measures and green attribute guarantee provided by a company will improve the practical value of this product. (R3)					
The carbon label and green certification set up by a company make me think that the quality of the product is becoming more reliable. (R4)					

A company actively participates in public welfare activities and enhances its social influence, which will bring additional positive social impacts to those who are using the products. (R5)					
Reports on the green development of companies by authoritative media and academic conferences convey better brand image and value. For those who adhere to green consumption, this can enhance external recognition. (R6)					

A Scale of Green Consumers' Trust after Intervention (Dependent Variable)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The green attributes of the company's product are reliable. (X1)					
The overall environmental protection performance of the company's product is reliable. (X2)					
The company's views on environmental protection are generally trustworthy. (X3)					
The environmental products of the company could satisfy my expectations. (X4)					
The company can uphold its promises on environmental protection. (X5)					

Appendix D Initiated Text of Implicit Beliefs

Green Consumers with Incremental Beliefs

Companies can correct their greenwashing practices under the pressure of a market regulator and public opinion.

Genuinely green companies, as they claimed, which take sustainable development as their own responsibility and integrate environmental interests and environmental management into the whole process of operation and management, naturally attract the attention of public opinion and social media. Especially in recent years, frequent exposure to greenwashing practices has increased the supervision of public opinion on genuinely green companies. Greenwashing companies adopting some practices or action to publicize their efforts to protect the environment are essentially marching forward in an opposite way. Under the pressure of government supervision and consumer opinion, many greenwashing companies can become genuinely greening companies by selecting raw materials, improving the operation process, importing green technology, and introducing environmental management standards.

According to the empirical research results of the study by Harvey et al. (2014) [60], the probability of a company that has experienced greenwashing correcting its greenwashing behavior and carrying out green operations is 88.79%. Recently, Dr. Terry Batter, a professional scholar in the field of green enterprise development, delivered a talk at the 9th China Enterprise Green Forum in June 2022, stating that companies are largely influenced by government supervision and consumer opinion and that even companies that have difficulty in implementing green operations, such as those in energy, chemicals, and electronics, have changed their greenwashing practices.

Green Consumers with Entity Beliefs

Companies cannot correct their greenwashing practices under the pressure of a market regulator and public opinion.

Genuinely green companies, as they claimed, which take sustainable development as their own responsibility and integrate environmental interests and environmental management into the whole process of operation and management, will naturally attract the attention of public opinion and social media. Especially in recent years, frequent exposure to greenwashing practices has increased the supervision of public opinion on genuinely green companies. Greenwashing companies adopting some practices or action to publicize their efforts to protect the environment are essentially marching forward in an opposite way. Even under the pressure of government supervision and consumer opinion, many greenwashing companies cannot truly become genuinely green companies with the nature of profit-seeking in green markets.

According to the empirical research results of the study by Harvey et al. (2014) [60], the probability of a company that has experienced greenwashing correcting its greenwashing behaviors and carrying out green operations is only 5.79%. Recently, Dr. Terry Batter, a professional scholar in the field of green enterprise development, delivered a talk at the 9th China Enterprise Green Contract Forum in June 2022, stating that even though companies are influenced by government supervision and green consumption demand, they have not changed their greenwashing practices.

Appendix E Initiated Text of Subjects That Implement Interventional Strategies

Scenario of Greenwashing Company A

Company A, which is renowned for its greater environmental protection and health priorities in producing LED bulbs, was actually exposed for conditions such as air pollution and water pollution in its production process. Even worse, its alleged high color rendering, low frequency of flickering, and other functions all had obvious problems. More importantly, in the aspect of energy consumption, it is difficult to reach its asserted rate, which was 18 kW/h per year, although the lab had performed numerous tests. In addition, according to the Internet notification of the State Administration for Market Regulation, in a spot check of 58 batches of LED bulbs of Company A's α brand lighting appliance, 8 batches were deemed unqualified. The nonconforming items among those checked are marked, thus generating an intense sense of distrust in consumers for green publicity in the energy-saving bulb industry.

(We show a scenario of the intervention strategies implemented by Greenwashing Company A as follows.)

If Company A truly exists, with your identity as an LED bulb consumer, what views do you hold about its greenwashing and its adopted strategies after reading the above material?

After being exposed for its "air pollution, water pollution, and failure to reach the propaganda effect of energy consumption" by the market regulator, the Ministry of Ecology and Environment of China, Company A adopted a series of strategies to restore trust; for example, it disclosed to the public the green information of the product and released the grading of authoritative departments on the green attributes of the product. Meanwhile, it selected a group of volunteers from the public to participate in the production assembly line in person and strengthened the regulation of the production process of LED bulbs. Furthermore, it accepted the strict regulation of related quality testing departments in China on its own initiative and invited professional personnel to check on it regularly. In addition, it promised that it would reveal each piece of information about its LED bulbs in a timely manner on its company websites, official WeChat accounts, and other authoritative platforms of environmental protection institutions. A special group led by the CEO of the company also promised to conduct investigations instantly and rectify and reform the problematic parts for consumers.

Scenario of Genuinely Green Company B

Taking "green life" as the main concept, Company B fully implements the sustainable development strategy of "green products and green culture" and advocates an environmen-

tal lifestyle. The company promises that its green products are in line with environmental protection standards (ISO 14001 and Eco Management and Audit Scheme) to keep advancing its after-sales service and placing emphasis on and giving feedback on the duration of product use, to recycle and replace new disused products, and to improve the credibility of green recyclable brand products.

After the greenwashing of Company A is disclosed by the market regulator, the Ministry of Ecology and Environment of China, green consumers form intense distrust towards the whole LED bulb industry, causing a sharp reduction in the sales of energy-saving bulbs. Under these impacts, the sales of the major profitable products of Company B, the energy-saving bulbs of Brand β, decreased by 52.71% in the first half of this year compared with that of the same period last year. The first-half net profit of the company decreased by 80% compared with that of the same period last year. Therefore, a series of strategies to restore green consumers' trust in Brand β were adopted; for example, it disclosed to the public the green information of the product and released the grading of authoritative departments on the green attributes of the product. Meanwhile, it selected a group of volunteers from the public to participate in the production assembly line in person and strengthened the regulation of the production process of LED bulbs. Furthermore, it accepted the strict regulation of related quality testing departments in China on its own initiative and invited professional personnel to check on it regularly. In addition, it promised that it would reveal each piece of information about its LED bulbs in a timely manner on its company websites, official WeChat accounts, and other authoritative platforms of environmental protection institutions. A special group led by the CEO of the company also promised to conduct investigations instantly and rectify and reform the problematic parts for consumers, in addition to setting up a special fund of 50 million yuan for environmental protection and public welfare donations.

We supplemented two scenarios to validate H1b the effects among different sequences of two intervention strategies on the regaining of green trust as follows:

Intervention Strategies (Distrust Regulation and Trustworthiness Demonstration)

As the LED bulb you always purchased has been exposed to greenwashing by the market regulator, the Ministry of Ecology and Environment of China, LED bulb companies in the green industry have adopted a number of intervention strategies. Please look through the following two paragraphs and the completed "A Scale of Consideration on Reattempted Costs-Benefits of Green Products" and "A Scale of Green Consumers Trust after Intervention".

Paragraph 1

TT announced that it would invite consumers to conduct prefatory trials and participate in the design of LED bulbs before their official launch. After conducting self-inspection of the greenwashed LED bulbs, TT actively contacted the corresponding consumers and presented a refund opportunity. For products that were not self-detected, if consumers take the initiative to report the product situation to the company's after-sales service department, the company will send a technician for verification within 1–7 working days; if the verification is passed, the consumer will receive a refund. TT promised that it would reveal each piece of information about its LED bulbs in a timely manner on its company websites, official WeChat accounts and other authoritative platforms of environmental protection institutions. TT also promised to add carbon footprint marks to the LED bulbs they sell in the future, so the company can better communicate with their consumers on the information of product carbon emissions, and the carbon marks also can remind consumers of ways to effectively use or dispose of the products.

Paragraph 2

On the front page of the TT website, a video recorded by its CEO, Hua, is displayed to explain the vision, mission, and objectives of the carbon emission project of the company, including its origins, development, and approach to create environmental value. As an industrial leader of LED bulbs, TT takes part in industrial conferences, green economic forums, and annual climate summits and often provides the keynote speaker, who delivers

the latest topics on green practices, green LED product innovation, its R&D progress, etc. Aiming to take responsibility in communities, TT sets up a special fund of 50 million yuan for environmental protection and public welfare, supporting the building of green communities, and investing 10 million yuan in the infrastructure within the communities, such as bike sharing, garage separation bins, and closing donation boxes. Considering the great significance of carbon sinks produced by forests and wetlands, TT invested 20 million yuan in the development and refurbishment of natural-based projects annually and updated the progress of the project in a special column on its website. Green consumers can look through and download the images, videos, and comments on the project they are interested in.

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