

## Article

# Influence of Environmentally Specific Transformational Leadership on Employees' Green Innovation Behavior—A Moderated Mediation Model

Jian Zhu, Weihang Tang, Bin Zhang and Hui Wang \*

Business School, Xiangtan University, Xiangtan 411105, China; 48216zhu@163.com (J.Z.);  
twh970713@163.com (W.T.); devinz@163.com (B.Z.)

\* Correspondence: wanghui8242@xtu.edu.cn

**Abstract:** Ecological environment issues put forward higher requirements for enterprises to undertake environmental responsibility. Therefore, how to encourage employees' green innovation behavior (EGIB) is of great significance for enterprises to practice green development. Based on the social exchange theory, this study constructs a moderating mediation model to explain the influence of environmentally specific transformational leadership (ESTL) on EGIB, in which green organization identity (GOI) and environmental commitment (EC) are used as mediators and the supervisor's organizational embodiment (SOE) is used as a moderator. Data collected from 297 employees of the manufacturing industry in China are used for empirical analysis. Results show that (a) ESTL positively affects EGIB, (b) both GOI and EC mediate the positive relationship between ESTL and EGIB, (c) the path of GOI—EC mediates the positive relationship between ESTL and EGIB, and (d) SOE positively moderates the indirect effect of ESTL on EGIB through GOI and EC, and SOE moderates the indirect effect of ESTL on EGIB through the path of GOI—EC. Theoretical contributions, practical implications, and future research are also discussed.

**Keywords:** environmentally specific transformational leadership; environmental commitment; green organizational identity; employees' green innovation behaviors; supervisor's organizational embodiment



**Citation:** Zhu, J.; Tang, W.; Zhang, B.; Wang, H. Influence of Environmentally Specific Transformational Leadership on Employees' Green Innovation Behavior—A Moderated Mediation Model. *Sustainability* **2022**, *14*, 1828. <https://doi.org/10.3390/su14031828>

Academic Editor: Carlos Rodriguez Monroy

Received: 23 December 2021

Accepted: 3 February 2022

Published: 5 February 2022

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Increased environmental pressures from society and the market in recent times, as well as modern regulations and laws, have enhanced enterprises' awareness of handling environmental issues, including the manufacturing industry—one of the main bodies of the real economy. Accordingly, enterprises have realized the importance of engaging in green innovation which refers to software or hardware innovation related to green processes or products, including the innovation in technologies that are involved in green product designs, energy-saving, pollution-prevention, waste recycling, or corporate environmental management so as to enhance environmental performance to satisfy the requirement of environmental protection [1,2]. Enterprises that advocate green innovation can make efficient use of resources and gain a better enterprise image and market share [3]. In other words, enterprises can gain an advantage over other enterprises in green competitiveness in an increasingly innovative environment [4–6]. Therefore, it is urgent for enterprises to practice green innovation. As is known to all, the key to enterprise innovation lies in its employees, employees' green innovation behavior (EGIB), which refers to employees' behavior of putting forward new ideas, adopting new methods, or introducing new technologies in improving environmental protection to promote the green innovation of enterprise. Exploring how to stimulate EGIB has increasingly become an important topic in the field of green innovation research [7,8].

Many organizational scholars have investigated employee green behavior, which is defined as the behavior that contributes to or impairs environmental sustainability in the

working environment [9]. However, research on EGIB has been few. Different from employees' green behavior, EGIB is a type of employee innovation behavior that emphasizes employees' innovative behavior aimed at environmental protection. Among several possible antecedents, leadership has been identified as a vital driver of employee innovation behavior. Transformational leadership is described as a process in which leaders play an ideal role model, inspiring and encouraging innovative work behavior, providing inspiring motivation, and participating in supporting and guiding followers to achieve the common vision and goals of the organization [10]. Transformational leadership is considered to be a particularly effective way to stimulate employees' innovative behavior [11–13] because transformational leadership theory emphasizes that encouraging innovation is the core leadership function [14]. Following the transformational leadership concept, Chen and Chang (2013) put forward the concept of green transformational leadership and defined it as the behaviors of leaders who motivate followers to achieve environmental goals and inspire followers to perform beyond expected levels of environmental performance [5]. Robertson (2018) developed green transformational leadership and further put forward environmentally specific transformational leadership (ESTL), which refers to a type of transformational leadership that focused on influencing corporate environmental responsibility [15]. ESTL can stimulate the members of the organization to achieve environmental protection goals and encourage them to achieve green performance beyond the expected level [16]. Although some studies have confirmed that ESTL influences team pro-environmental behaviors through green human resource management practices at the team level [17], the research on how and when ESTL affects EGIB is not sufficient.

To fill in the preceding gaps, this study introduces both employees' green organization identity (GOI) and employees' environmental commitment (EC) as mediators to explore how ESTL affects EGIB. Social exchange theory holds that employees will maintain the exchange relationship with others under the expectation of return. This reciprocity principle, which social exchange theory emphasizes, promotes the emergence of exchange. When leaders care about the environment and personally practice environmental protection practices, it helps to improve employees' GOI and stimulate employees' EC. According to social exchange theory, first, ESTL can enhance employees' GOI which helps employees to understand organizational goals better and enhance their GOI, which leads to EGIB [18]. Second, ESTL can motivate employees' EC by articulating a vision that elevates employees' confidence and expectations [19]; EC significantly enhances individual attitudes toward the environment, thus improving EGIB [20]. Third, as employees' GOI is enhanced, it will lead to employees' EC which enables employees to exhibit green innovation behaviors at work [21]. Thus, ESTL also indirectly affects EGIB via the path of GOI-EC. In addition, SOE refers to employees' perception of the extent to which their leader shares the values and norms of their organization, SOE also reflects the degree to which employees equate leaders with the organization. A leader who is perceived to embody the characteristics of the organization is more likely to affect employees' attitudes towards the organization. Thus, SOE may moderate the relationship between ESTL and GOI and the relationship between ESTL and EC.

To sum up, based on the social exchange theory, this study explores the mechanism of ESTL on EGIB in which GOI and EC are used as mediators and SOE is used as a moderator. This study has the following contributions. First, this study contributes to the EGIB literature by revealing the relationship between ESTL and EGIB. Although some previous research has examined the relationship between ESTL and team pro-environmental behaviors [19], little literature focused on the effect of ESTL on EGIB. Second, this study contributes to the mediating effect of how ESTL affects EGIB. Based on cognition and affection perspectives, this study explores the mediating role of GOI and EG between ESTL and EGIB. Third, this study explores the moderating role of SOE on the indirect effect of ESTL on EGIB via GOI and EG. Thus, this study also broadens the boundary condition of the influence of ESTL on EGIB.

## 2. Literature Review and Hypotheses

### 2.1. ESTL and EGIB

ESTL is defined as a manifestation of transformational leadership in which the leadership behaviors are focused on encouraging pro-environmental initiatives and green behaviors [16]. ESTL includes four behaviors: environmentally inspirational motivation, environmentally idealized influence, environmentally individualized consideration, and environmentally intellectual stimulation [16]. Specifically, environmental inspirational motivation refers to leaders sincerely encouraging their subordinates to go beyond their self-interests and to strive for a common vision of environmental protection. Environmental idealized influence refers to leaders actually engaging in environmental protection actions so as to set an environmental protection example to be followed. Environmental individualized consideration refers to leaders establishing close relationships with their subordinates so that they can help subordinates to develop environmental protection skills. Environmental intellectual stimulation refers to leaders stimulating subordinates to take innovation and to deal with environmental problems in novel ways [17]. Green innovation refers to the introduction of any new or improved product (service), process, marketing solution, or organizational change that reduces the use of natural resources (including energy, materials, land, and water) and decreases the release of harmful substances across the whole life cycle of the product [22]. EGIB is defined as the measures of the employee in the development, application, or introduction of new ideas, as well as the ecologically specified sustainability targets [23,24].

ESTL, which emphasizes setting a green vision for employees, can drive EGIB. Specifically, leaders can guide employees to contribute to EGIB in the work through environmentally inspirational motivation, environmentally idealized influence, environmentally individualized consideration, and environmentally intellectual stimulation. First, leaders inspire employees to overcome psychological setbacks and external obstacles through their own passion and optimism and inspire their enthusiasm for green innovation [25]. Second, leaders actually engage in environmental protection actions, which makes employees more likely to follow the leaders and embrace green innovation. Third, leaders encourage employees to think independently and challenge some outdated environmental management practices. By doing this, leaders stimulate employees' green innovation initiatives and give them the opportunity to challenge conventional thinking. Fourth, leaders attach importance to employees' ability and contribution to environmental protection, help subordinates develop environmental protection skills, and guide employees to solve environmental problems in innovative ways. ESTL makes employees feel that leaders encourage EGIB, and EGIB can enable employees to obtain the affirmation of leaders and other material and spiritual rewards [26]. Hence, we put forward the following hypothesis:

**Hypothesis 1 (H1).** *ESTL is positively related to EGIB.*

### 2.2. GOI as a Mediator on the Relationship between ESTL and EGIB

From the perspective of cognition, organizational identity is an individual's cognitive process of the feeling of membership and belonging in an organization which reflects the consistency of the individual and organization in value [27]. Organizational members, especially leaders, can modify their interpretations or promote new conceptualizations that would reshape organizational identity when environmental changes occur [28,29]. GOI is defined as an explanatory scheme for environmental management and environmental protection constructed by members collectively to provide meaning to their behaviors, which reflects the extent to which employees perceive the internalization of their values and goals [30].

Social exchange theory holds that employees will maintain the exchange relationship with others under the expectation of return. This reciprocity principle, which social exchange theory emphasizes, promotes the emergence of exchange. According to social exchange theory, ESTL can enhance employees' GOI which stimulates EGIB. To be specific,

first, leaders can show pro-environmental behavior which will set an example of environmental protection for their employees and lead to employees having a more positive attitude towards the environmental protection of the organization [31]. Second, leaders provide employees with a vision of environmental protection through their passion and optimism for environmental protection and train employees to shift their attention to the long-term development of the organization and nature. Third, leaders can encourage employees to have more sense of responsibility and think about the environment by linking subordinates' values with work values, so as to stimulate employees' GOI. Finally, leaders can build a good relationship with their employees to increase their attention to environmental protection and make employees feel positive about environmental management [32]. In general, ESTL can gradually influence the attitude of employees to deal with environmental problems, improve their enthusiasm for environmental protection, and thus achieve the effect of improving employees' GOI.

As a conscious and planned innovation behavior, EGIB requires employees' identification with green development and green innovation intention so that they can exhibit such behaviors at work. Firstly, GOI provides an incentive for employees to carry out green innovation behaviors. This incentive is a kind of deep internal stimulation and can effectively maintain the long-term relationship between employees and the organization. Second, when employees agree with the organization's environmental management, they will think their interests are consistent with the organizations' interests. Thus, employees will make effort to pursue environmental benefits for the organization and actively provide the organization with improving environmental protection suggestions and innovative ideas. In addition, some scholars point out that employees' organizational identity will promote their work innovation and proactive responsible behavior [33]. Therefore, this study concluded that when employees have a high GOI, they are more willing to actively display green innovation behaviors. Following the above discussion, it can be seen that ESTL conveys the company's environmental goals to employees, arouses their passion for environmental protection, and makes employees' awareness of environmental protection consistent with the organization. Employees then better understand and identify with green innovation behaviors at work so as to actively show green innovative behaviors for the green development of the organization [34]. Thus, we developed the following hypothesis:

**Hypothesis 2 (H2).** *GOI mediates the relationship between ESTL and EGIB.*

### 2.3. EC as a Mediator between ESTL and EGIB

Commitment is a spontaneous sense of responsibility for goals based on psychological attachment and the internalization of organizational goals and values [35–38]. Whether or not individuals feel "close" or "connected" to nature, they are interdependent with nature in the sense that the well-being of nature can affect the well-being of individuals (and vice versa). EC is defined as a psychological state of individuals which denotes both a sense of attachment and responsibility to environmental issues in the workplace [39].

ESTL pays attention to environmental issues and encourages employees to protect the environment; if employees are more likely to experience the value and significance of the green development, then employees' EG will be enhanced [37]. First, leaders with ESTL actively show green preference and set an example of environmental protection for their subordinates, which will enhance subordinates' EC and increase their understanding of the willingness to pursue green goals. Second, leaders with ESTL take the well-being of nature as their pursuit and face environmental problems with an optimistic spirit. By doing this, leaders will reshape employees' views of nature and cultivate their green enthusiasm so as to promote employees to work for the long-term development of the organization and nature. Third, leaders with ESTL encourage employees to think independently, challenge outdated environmental management practices, and solve environmental problems in innovative ways to improve employees' green participation [38] so that employees can learn abundant information about the workplace environment and the ecological status.

In this way, employees will be more aware of the impact of corporate activities on the environment and have a higher sense of responsibility to protect the environment. Lastly, leaders can attach importance to employees' ability and contribution to environmental protection and help them develop environmental protection skills which can enhance employees' willingness and responsibility to solve environmental problems.

Employees with a high level of EC, are more willing to work deeply to solve environmental problems and develop new skills. First, commitment provides direction for individuals' behavior and significantly promotes the achievement of overall goals through self-interest beyond the individual. Individuals who are committed to the environment will be likely to move beyond self-interest and act with the well-being of the environment in mind. Second, employees with higher EC have a higher green tendency and will prioritize the benefit maximization of the natural environment [39]. Thus, when employees with higher EC face the choice of environmental protection, they will have a clearer order of multiple values, that is, the value of environmental protection will be more important. This feeling will stimulate an internal motivation which makes them more willing to make efforts for the environment [37]. In addition, some scholars have also shown that EC can predict employees' engagement in environmental behavior, including EGIB [40]. In conclusion, ESTL stimulates employees' EC, which leads to EGIB. Therefore, this study brings forth the following hypothesis:

**Hypothesis 3 (H3).** *EC mediates the relationship between ESTL and EGIB.*

#### 2.4. The Serial Mediating Effect of GOI—EC between ESTL and EGIB

GOI is cognition that reflects the consistency of the individual and organization in value on environmental protection [41], while EC represents a psychological state that denotes both a sense of attachment and responsibility to environmental issues in the workplace [37]. Just as an organizational identity could influence organization commitment [42], we can conduct that GOI is positively related to EC, and further, there may be a serial mediation effect of GOI and EC between the relationship of ESTL on EGIB.

First, leaders tilt their values and behavioral preferences towards green and guide and encourage employees to carry out green behaviors. These increasingly positive environmental signals will lead employees to have a deeper understanding of their significance to the realization of the green goals of the organization so as to understand what they do at work. Second, employees with a high GOI will realize the closer connection between themselves and the natural environment, thus they will show more EC [24]. Third, a stronger sense of identity and commitment usually implies a solid incentive to engage in work and perform well, as well as loyalty to the status quo and some degree of compliance and adherence to established practices [43,44]. In other words, employees with a higher GOI and EC are more willing to consciously generate or introduce novel ideas in order to achieve a higher level of environmentally sustainable development when making pro-environment behavior choices. Consequently, the following hypothesis is proposed:

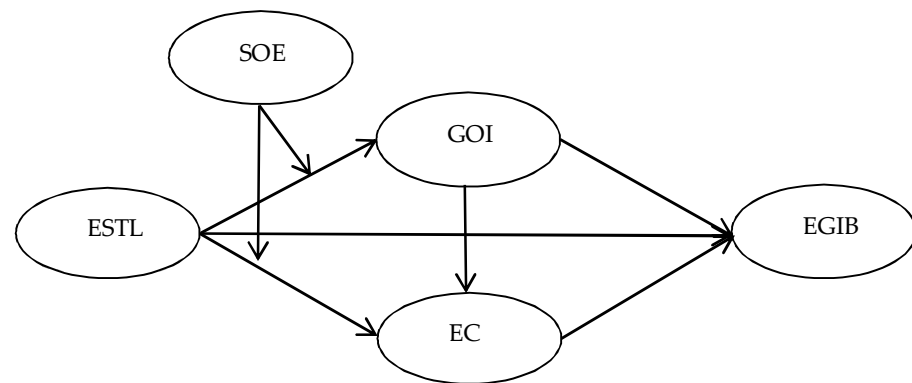
**Hypothesis 4 (H4).** *ESTL indirectly positively relates to EGIB through the mediating path of GOI—EC.*

#### 2.5. Moderating Role of SOE

SOE refers to employees' perception of the extent to which their leader shares the values and norms of their organization, which reflects the degree to which employees equate leaders with the organization [45] (Figure 1). A leader who is perceived to embody the characteristics of the organization is more likely to affect employees' attitudes towards the organization [45]. In practice, not all employees regard the leader as an agent of the organization and there are differences among employees in the degree of this recognition. Employees, who perceived a high SOE tend to view their supervisor as having values, motives, and objectives that may vary in similarity with those of the organization. Ac-



Accordingly, they will view a compliment or criticism from the supervisor as a compliment from the organization, and regard supervisors' statements on goals and objectives of the organization as accurate and definitive. In contrast, employees, who perceived a low SOE, tend to view that the supervisor acting more on his or her own behalf and that the employee's relationship with the supervisor is less of a guide to the exchange relationship with the organization. Accordingly, they will regard a compliment or criticism from the supervisor as coming primarily from the supervisor rather than the organization and consider the supervisor's statement of organizational goals and performance instructions as unclear [45]. Therefore, SOE can connect the relationship among leaders, employees, and organizations, and provide a more accurate interpretation of how the relationship between leaders and employees is transmitted to affect the relationship between employees and organizations. Eisenberger et al. (2010) further proved that higher leader SOE facilitates the generalization of followers' feelings and attitudes towards their leader to the organization, by showing that high levels of SOE are necessary to translate a high-quality relationship with the leader into higher organizational commitment [45]. Costa et al. (2021) argued that SOE positively moderates the relationship between ethical leadership and employees' organizational identity [46].



**Figure 1.** Research framework.

Following these theoretical propositions and empirical evidence, we can infer that an important boundary condition on the influence of ESTL on GOI and EC is SOE. When the SOE perceived by an employee is high, the employee will regard the leaders' statement of the green target as the willingness of the organization, which can effectively improve employees' GOI and EC. On the contrary, when the SOE perceived by an employee is low, the employee may not view leaders' statement of the green target as the willingness of the organization, thus the positive influence of ESTL on GOI and EC will be weakened. Consequently, the following hypotheses are proposed:

**Hypothesis 5a (H5a).** *SOE moderates the relationship between ESTL and GOI, such that the positive relation is stronger when SOE is higher.*

**Hypothesis 6a (H6a).** *SOE moderates the relationship between ESTL and EC, such that the positive relation is stronger when SOE is higher.*

Furthermore, combining H5a with H2, we suggest a moderated mediation model in which the interaction between ESTL and SOE on GOI leads to higher EGIB. In other words, when with a high-level SOE, employees tend to view that leaders' concern on environmental protection represents the organization's attitude toward environmental protection and the positive relationship between ESTL and GOI will be strengthened which in turn promotes employees to make more green innovation behaviors. On the contrary, when with a low-level SOE, employees tend to view that the leader's green behavior is to seek their own interests rather than pursue the sustainable development of the organization,

thus the positive influence of ESTL on EGIB through GOI will be weakened. Meanwhile, combining H6a with H3, we suggest a moderated mediation model in which the interaction between ESTL and SOE is indirectly and positively related to EGIB via EC. Specifically, when with a high-level SOE, employees tend to view that leaders' concern on environmental protection represents the organization's attitude toward environmental protection, and the positive relationship between ESTL and EC will be strengthened, which then leads to higher EGIB. On the contrary, when with a low-level SOE, employees may view the leader's green behavior as "putting on a show" rather than pursuing the sustainable development of the organization, thus the positive influence of ESTL on EGIB via EC will be weakened. Accordingly, we posited the following hypotheses:

**Hypothesis 5b (H5b).** *SOE moderates the relationship between ESTL and EGIB mediated by GOI, such that the mediating effect is stronger under high SOE than under low SOE.*

**Hypothesis 6b (H6b).** *SOE moderates the relationship between ESTL and EGIB mediated by EC, such that the mediated relationship is stronger under high SOE than under low SOE.*

**Hypothesis 7 (H7).** *SOE moderates the strength of the relationship between ESTL and EGIB mediated by the path of GOI—EC, such that the mediated relationship is stronger under high SOE than under low SOE.*

### 3. Methodology and Measurement

#### 3.1. Data Collection and Sample

To examine the theoretical model, data were collected from employees of enterprises in China's manufacturing industry. This study selected manufacturing industry enterprises for two reasons: First, China has a massive manufacturing industry. Second, in recent years, China has been committed to green transformation and upgrading the manufacturing industry. We administered a questionnaire from August to September 2021.

This study employed the snowball sampling approach to construct the company sample. First, 350 participants were recruited through the MBA alumni. Second, a private email was sent to all participants several days before the questionnaire survey to explain the research procedure and to emphasize that the survey is for academic research purposes only and under complete confidentiality. Then, the questionnaire link was emailed to 350 participants. A total of 350 electronic questionnaires were collected from the questionnaire survey and invalid questionnaires such as those with irregular answers were eliminated. Finally, 297 samples were used for empirical analysis with a response rate of 84.86%. Table 1 shows the sample description.

**Table 1.** Sample description.

Measure	Items	Frequency	Ratio	Measure	Items	Frequency	Ratio
Gender	Male	138	46.50%	Enterprise size	Large enterprises	70	23.6%
	Female	159	53.50%		Medium-sized enterprises	133	44.8%
Age	25 years old and below	50	16.8%		Small enterprises	94	31.6%
	26–30 years old	85	29.6%	Transportation equipment	43	14.5%	
	31–40 years old	86	29.0%	Electronic equipment	41	13.8%	
	41–50 years old	42	14.1%	Office equipment	6	2.0%	
	51 years old and above	34	11.4%	Industry	Food	27	9.0%
Education	High school education and below	46	15.5%	Textile	26	8.8%	
	Junior college	47	15.8%	Wood processing	7	2.4%	
	Undergraduate education	175	58.9%	Entertainment supplies	23	7.7%	
	Postgraduate education	29	9.8%	Oil processing	5	1.7%	

Table 1. Cont.

Measure	Items	Frequency	Ratio	Measure	Items	Frequency	Ratio
Positions	Financial position	13	4.4%		Pharmaceutical	3	1.0%
	Productive position	45	15.2%		Chemical products	10	3.4%
	Sales position	27	9.1%		Nonmetallic mineral	4	1.3%
	Management position	35	11.8%		Metal products	7	2.4%
	Technical position	94	31.6%		Smelting and calendering processing	5	1.7%
Years of working	Less than 1 year	25	8.4%		General equipment	15	5.1%
	Between 1 and 5 years	82	27.6%		Special equipment	7	2.4%
	Between 5 and 15 years	112	37.7%		Tobacco	7	2.4%
	Between 15 and 30 years	51	17.2%		Electrical machinery	61	20.5%
	More than 30 years	27	9.1%				

### 3.2. Measures

The variables include ESTL, GOI, EC, EGIB, and SOE. All scale items were originally developed in English and are therefore translated into Chinese with some items modified according to the Chinese context (see Table 2). All items were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) except for control variables. ESTL is measured with the scale of twelve items developed by Robertson [15]. GOI is measured with a six-item scale developed by Chen [29]. EC is measured with an eight-item scale developed by Raineri et al. [37]. EGIB is measured with a four-item scale developed by Li et al. [8]. SOE is measured with a nine-item scale developed by Eisenberger et al. [45].

Table 2. Items for measurement.

Variable	Item No.	Item Content
ESTL	ESTL1	My leader is a model in environmental protection.
	ESTL2	My leader inspires me to work in a pro-environmentally way.
	ESTL3	My leader commitments to improving the environmental performance of our organization.
	ESTL4	My leader encourages me to deal with environmental issues in different ways.
	ESTL5	My leader is concerned about the natural environment.
	ESTL6	My leader is willing to adopt ideas on how to improve the organization's environmental performance.
	ESTL7	My leader believes in my ability to improve the environmental performance of our organization.
	ESTL8	My leader pays attention to my contributions to the environmental performance of our organization.
	ESTL9	My leader spends time developing my skills to improve the environmental performance of our organization.
	ESTL10	My leader is keen to improve the future state of the natural environment.
	ESTL11	My leader encourages me to think creatively about how to improve the environmental performance of our organization.
	ESTL12	My leader is optimistic about the future environmental performance of the organization.
GOI	GOI1	I am proud of our organization's history in environmental management and protection.
	GOI2	I am proud of our organization's environmental objectives and missions.
	GOI3	I think our organization maintains an important position in environmental management and protection.
	GOI4	I think that our organization has set well-defined environmental objectives and missions.
	GOI5	I am knowledgeable about our organization's environmental culture.
	GOI6	I think our organization has paid great attention to environmental management and protection.
EC	EC1	I really care about the environmental issues of our organization.
	EC2	I would feel guilty about not supporting the environmental efforts of our organization.
	EC3	Our organization's concern for the environment means a lot to me.
	EC4	I feel responsible for supporting our organization's environmental protection work.
	EC5	I really feel that our organization's environmental problems are my own.
	EC6	I am very concerned about the environmental concern of our organization.
	EC7	I think I have the obligation to support our organization's environmental protection work.
	EC8	I attach great importance to the environmental protection work of our organization.



Table 2. Cont.

Variable	Item No.	Item Content
EGIB	EGIB1	I will actively participate in the development/production of green products.
	EGIB2	In product design, I will try my best to reduce the possible harm to users.
	EGIB3	I will strive to eliminate technical risks and reduce material waste in product production.
	EGIB4	I have already started working on product development/production by following “green” standards.
SOE	SOE1	When my leader encourages me, I believe our organization is encouraging me.
	SOE2	When my leader is pleased with my work, I feel our organization is pleased.
	SOE3	When my leader compliments me, it is the same as our organization complimenting me.
	SOE4	When my leader pays attention to my efforts, I believe our organization is paying attention to my efforts.
	SOE5	My leader is characteristic of our organization.
	SOE6	My leader and our organization have a lot in common.
	SOE7	When I am evaluated by my leader, it is the same as being evaluated by our organization.
	SOE8	My leader is representative of our organization.
	SOE9	My leader is typical of our organization.

In addition, according to existing research, this study selected gender, age, education level, enterprise size, position, years of working, and industry as the control variables. Thus, this study controlled for employee gender (1 = male, 2 = female), age (1 = under 25 years, 2 = 26–30 years, 3 = 31–40 years, 4 = 41–50 years; and 5 = over 51 years), education level (1 = senior high school or below, 2 = junior college, 3 = bachelor, and 4 = postgraduate), enterprise size (1 = large enterprises, 2 = medium-sized enterprises, and 3 = small enterprises), position (1 = financial position, 2 = productive position, 3 = sales position, 4 = management position, and 5 = technical position), years of working (1 = less than 1 year, 2 = between 1 and 5 years, 3 = between 5 and 15 years, 4 = between 15 and 30 year, and 5 = more than 30 years), and industry, which mainly included 17 manufacturing industries (see Table 1).

### 3.3. Data Analysis

This study used SPSS 23.0 and Mplus 8.0 to analyze the data. First, SPSS 23.0 was used to test the reliability of variables in the theoretical model and conduct descriptive statistics and correlation analysis. Second, Mplus 8.0 was used to conduct confirmatory factor analysis (CFA) and the common method variance test (CMV). Third, Mplus 8.0 was used to conduct a path analysis and aggregation analysis.

## 4. Results

### 4.1. Reliability and Validity Test

To test reliability, SPSS 23.0 was used to calculate Cronbach’s  $\alpha$  coefficient, and the results are shown in Table 3. The Cronbach’s  $\alpha$  coefficients of all variables were greater than 0.7, indicating that the questionnaire had good reliability.

Table 3. Reliability and validity tests of variables.

Constructs	Load Factor	Cronbach’s $\alpha$	AVE	CR
ESTL	0.670~0.766	0.931	0.530	0.931
GOI	0.666~0.749	0.861	0.509	0.861
EC	0.661~0.738	0.888	0.502	0.890
EGIB	0.687~0.855	0.872	0.638	0.875
SOE	0.848~0.900	0.967	0.766	0.967

Note: CR = combination reliability; AVE = average variance extracted.

As shown in Table 3, the factor loading values of all variables were greater than 0.6, and the average variance extracted (AVE) values of all variables were greater than 0.5, indicating that the questionnaire had a good aggregation validity. In addition, as shown in Table 4, the square root value of AVE for each latent variable is greater than the correlation of all the remaining constructs in the row and column in which it is located. Consequently, the

structure has appropriate discriminant validity. Furthermore, Mplus 8.0 was used to carry out confirmatory factor analysis (CFA). Compared with competition models, the theoretical five-factor model (ESTL, GOI, EC, EGIB, and SOE) had a better fit to the data ( $\chi^2/df = 1.936$ , RMSEA = 0.056, CFI = 0.923, TLI = 0.917, SRMR = 0.044) (see Table 5), The results of CFA showed that the theoretical five-factor model had satisfactory discriminant validity.

**Table 4.** Descriptive statistics and correlation coefficients of variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Sex	-											
2. Age	0.045	-										
3. Education	-0.182 **	-0.538 **	-									
4. Industry	0.175 **	-0.007	-0.102	-								
5. Size	0.056	0.172 **	-0.170 **	-0.162 **	-							
6. Position	-0.055	0.169 **	-0.241 **	0.055	0.113	-						
7. Year	0.047	0.857 **	-0.440 **	-0.049	0.244 **	0.143 *	-					
8. ESTL	-0.046	0.065	-0.033	0.015	0.073	-0.186 **	0.044	(0.728)				
9. GOI	-0.071	0.111	-0.022	0.033	0.063	-0.198 **	0.087	0.674 **	(0.713)			
10. EC	-0.117 *	0.103	-0.032	-0.002	0.076	-0.126 *	0.046	0.572 **	0.670 **	(0.708)		
11. EGIB	-0.093	-0.045	0.070	0.061	0.023	-0.208 **	-0.049	0.680 **	0.680 **	0.684 **	(0.799)	
12. SOE	0.017	0.096	-0.050	0.123 *	-0.014	0.060	0.080	-0.148 *	0.100	0.200 **	0.008	(0.875)
M	1.535	2.748	2.630	8.108	2.081	4.350	2.909	4.025	3.993	4.117	3.925	3.368
SD	0.500	1.225	0.861	6.106	0.740	1.553	1.069	0.611	0.570	0.475	0.660	0.905

Note: N = 296; M = mean; SD = standard deviation; \*\*  $p < 0.01$ ; \*  $p < 0.05$ . Values in parentheses are square roots of AVE.

**Table 5.** Confirmatory factor analysis results.

Model	Factor	$\chi^2/df$	RMSEA	CFI	TLI	SRMR
Five-factor model	ESTL, SOE, GOI, EC, EGIB	1.936	0.056	0.923	0.917	0.044
Four-factor model	ESTL, SOE, GOI + EC, EGIB	2.193	0.063	0.901	0.895	0.053
Three-factor model	ESTL + SOE, GOI + EC, EGIB	6.306	0.134	0.558	0.531	0.182
Two-factor model	ESTL + SOE + GOI + EC, EGIB	7.061	0.143	0.493	0.464	0.182
Single-factor model	ESTL + SOE + GOI + EC + EGIB	7.250	0.145	0.477	0.448	0.182

Note: RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index.

#### 4.2. Common Method Variance Test

Although the anonymous measurement method was used to reduce common method variance in the data collection process, common method variance may occur. The reason was that all variables were measured by individual self-evaluation and that the same survey object provided all items in each questionnaire. Thus, the Harman single-factor test was used to judge the existence of common method variance. One factor solution in exploratory factor analysis indicated that it explained only 34.08% (<50%) of the loading, which proved the absence of common method variance [47].

#### 4.3. Descriptive Statistics and Correlation Analysis

The mean, standard deviation, and correlation coefficient of the main variables in this study are shown in Table 4. It can be seen from Table 4 that ESTL has a significant positive correlation with EGIB ( $r = 0.680, p < 0.01$ ); ESTL has a significant positive correlation with GOI ( $r = 0.528, p < 0.01$ ); ESTL and EC are significantly positively correlated ( $r = 0.572, p < 0.01$ ); GOI and EC are significantly positively correlated ( $r = 0.670, p < 0.01$ ); GOI and EGIB are significantly positively correlated ( $r = 0.680, p < 0.01$ ); and EC is significantly positively correlated with EGIB ( $r = 0.684, p < 0.01$ ). The results of correlation analysis initially verifies the research hypotheses.

#### 4.4. Hypotheses Testing

In this study, we used the Bootstrap method by the Mplus 8.0 to test the hypotheses; Tables 6–8 show the results.

**Table 6.** Bootstrap: the direct effect and the mediating effect.

	Relationship	Effect	S.E.	p-Value	Boot95%CI
Total Effect	ESTL→EGIB	0.718	0.054	0.000	{0.614, 0.825}
Indirect Effect	ESTL→GOI→EGIB	0.157	0.054	0.004	{0.065, 0.277}
	ESTL→EC→EGIB	0.083	0.032	0.011	{0.029, 0.157}
Direct Effect	ESTL→EGIB	0.354	0.061	0.000	{0.239, 0.479}
Serial Mediating Effect	ESTL→GOI→EC→EGIB	0.124	0.028	0.000	{0.077, 0.188}

**Table 7.** Results for moderation effect analysis.

Relationship	Path Coefficient	S.E.	p-Value
ESTL × SOE→GOI	0.147 **	0.055	0.008
ESTL × SOE→EC	0.127 **	0.047	0.007

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

**Table 8.** Bootstrap: mediating moderating effect and serial mediating moderating effect.

Moderator: SOE	Relationship	Effect	S.E.	p-Value	Boot95%CI
Low (−1SD)	ESTL→GOI→EGIB	0.121	0.047	0.010	{0.045, 0.228}
High (+1SD)		0.194	0.066	0.003	{0.082, 0.337}
Difference		0.073	0.035	0.038	{0.018, 0.161}
Low (−1SD)	ESTL→EC→EGIB	0.064	0.036	0.072	{−0.001, 0.142}
High (+1SD)		0.165	0.049	0.001	{0.095, 0.165}
Difference		0.101	0.046	0.030	{0.026, 0.209}
Low (−1SD)	ESTL→GOI→EC→EGIB	0.076	0.025	0.002	{0.038, 0.135}
High (+1SD)		0.122	0.031	0.000	{0.007, 0.196}
Difference		0.046	0.019	0.017	{0.015, 0.095}

#### 4.4.1. Direct Effect

H1 argues that ESTL positively relates to EGIB. In Table 6, the total effect coefficient of ESTL on EGIB is significant ( $\beta = 0.718$ ,  $p < 0.001$ ). Furthermore, the 5000 bootstrap sampling shows that the distribution of the product of coefficients' 95% CI is {0.614, 0.825} (excluding zero). Thus, H1 is supported.

#### 4.4.2. Mediating Effect Tests

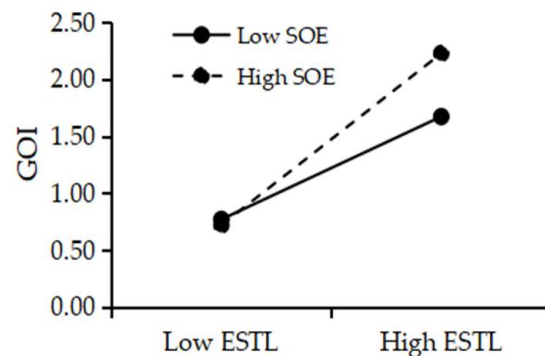
H2 argues that ESTL indirectly affects EGIB through GOI. In Table 6, the indirect effect of GOI is significant ( $\beta = 0.157$ ,  $p < 0.01$ ), and the 5000 bootstrap sampling shows that the distribution of the product of coefficients' 95% CI is {0.065, 0.277} (excluding zero). H2 consequently receives support. H3 argues that ESTL indirectly affects EGIB through EC. In Table 6, the indirect effect of EC is significant ( $\beta = 0.083$ ,  $p < 0.05$ ), and the 5000 bootstrap sampling shows that the distribution of the product of coefficients' 95% CI is {0.029, 0.157} (excluding zero). H3 consequently receives support. EC is proved to play a mediating role in the relationship between ESTL and EGIB.

H4 argues that the path GOI—EC mediates the positive relationship between ESTL and EGIB. In Table 6, the indirect effect of “ESTL→GOI→EC→EGIB” is significant ( $\beta = 0.124$ ,  $p < 0.001$ ), and the 5000 bootstrap sampling shows the distribution of the product of coefficients 95% CI is {0.077, 0.188} (excluding zero). H4 consequently receives support. ESTL indirectly positively relates to EGIB through the mediating path of GOI—EC.

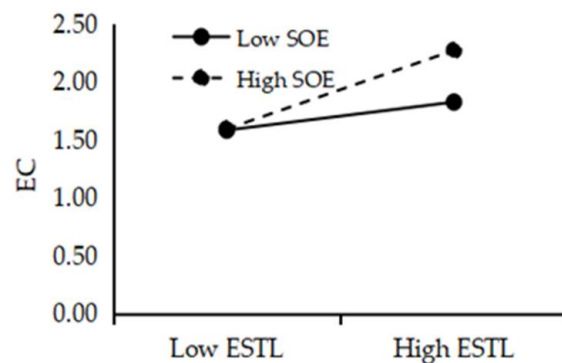
#### 4.4.3. Moderating Effect Tests

Tables 7 and 8 show the results of moderating effect tests. H5a argues that SOE moderates the relationship between ESTL and GOI. In Table 7, the path coefficient from the interaction of ESTL and SOE to GOI is 0.147 ( $p < 0.01$ ), indicating that SOE can effectively enhance the positive impact of ESTL on GOI, and H5a is verified. H6a argues that SOE moderates the relationship between ESTL and EC. In Table 7, the path coefficient from

interaction terms of ESTL and SOE to EC is 0.127 ( $p < 0.01$ ), indicating that SOE can effectively enhance the positive impact of ESTL on EC, and H6a is verified. In order to display the moderating effect more intuitively, the moderating effect diagram is drawn by combining the representative leadership organization with ( $M - 1SD$ ) and ( $M + 1SD$ ) respectively, as shown in Figures 2 and 3. It can be seen from Figures 2 and 3 that when the SOE is at a high level, the effect of ESTL on GOI and EC is enhanced. When the SOE is at a low level, the effect of ESTL on GOI and EC is weakened, and H5a and H6a are further verified.



**Figure 2.** Moderating Effect of SOE on the ESTL and GOI.



**Figure 3.** Moderating Effect of SOE on the ESTL and EC.

H5b argues that SOE moderates the strength of the relationship between ESTL and EGIB mediated by GOI. In Table 8, when the SOE is lower than 1 standard deviation, the mediating effect of ESTL on EGIB through GOI is 0.121 ( $p < 0.05$ ), and the product of coefficients' 95% CI is {0.045, 0.228}. When the SOE is higher than 1 standard deviation, the mediating effect value of ESTL on EGIB through GOI is 0.194, and the product of coefficients' 95% CI is {0.082, 0.337} (excluding zero). There is a significant difference between the two effects. The effect value is 0.073 ( $p < 0.05$ ), and the product of coefficients' 95% CI is {0.018, 0.161} (excluding zero), H5b is verified.

H6b argues that SOE moderates the relationship between ESTL and EC. In Table 8, when the SOE is lower than 1 standard deviation, the mediating effect of ESTL on EGIB through environmental commitment is 0.064 ( $p < 0.1$ ), and the product of coefficients' 95% CI is {−0.001, 0.142}. When the SOE is higher than 1 standard deviation, the mediating effect of ESTL on EGIB through EC is 0.165 ( $p < 0.01$ ), and the product of coefficients' 95% CI was {0.095, 0.165}. The difference between the two effects was significant. The effect value is 0.101 and the product of coefficients' 95% CI is {0.026, 0.209} (excluding zero). H6b is verified.

H7 argues that SOE moderates the strength of the relationship between ESTL and EGIB mediated by GOI and EC. In Table 8, when the SOE is lower than 1 standard deviation, the serial mediating effect of ESTL on EGIB through the path GOI—EC is 0.076 ( $p < 0.01$ ),

and the product of coefficients' 95% CI is {0.073, 0.188} (excluding zero). When the SOE is higher than 1 standard deviation, the serial mediating effect is 0.122 ( $p < 0.01$ ), and the product of coefficients' 95% CI is {0.114, 0.259} (excluding zero). The difference between the two effects is significant. The mediating effect value is 0.046 ( $p < 0.05$ ), and the product of coefficients' 95% CI is {0.015, 0.095} (excluding zero). H7 is verified.

## 5. Conclusions and Implications

### 5.1. Research Conclusions

Based on the social exchange theory, this study constructed a moderated serial-mediation model to explore how and when ESTL impact EGIB. The empirical research results are shown in Table 9.

**Table 9.** Results of hypotheses.

Hypothesis	Results
H1. ESTL is positively related to EGIB.	Supported
H2. GOI mediates the relationship between ESTL and EGIB.	Supported
H3. EC mediates the relationship between ESTL and EGIB.	Supported
H4. ESTL indirectly positively relates to EGIB through the mediating path of GOI—EC.	Supported
H5a. SOE moderates the relationship between ESTL and GOI, such that the positive relation is stronger when SOE is higher.	Supported
H5b. SOE moderates the relationship between ESTL and EGIB mediated by GOI, such that the mediating effect is stronger under high SOE than under low SOE.	Supported
H6a. SOE moderates the relationship between ESTL and EC, such that the positive relation is stronger when SOE is higher.	Supported
H6b. SOE moderates the relationship between ESTL and EGIB mediated by EC, such that the mediated relationship is stronger under high SOE than under low SOE.	Supported
H7. SOE moderates the strength of the relationship between ESTL and EGIB mediated by the path of GOI—EC, such that the mediated relationship is stronger under high SOE than under low SOE.	Supported

First, ESTL positively relates to EGIB. When employees perceive that their leaders are pro-environment, they will think that their leaders idealize influence, environmentally inspirational motivation, environmentally intellectual stimulation, and environmentally individualized consideration, which are more likely to inspire employees to break traditional working thinking and solve environmental problems in innovative ways.

Second, both GOI and EC play mediating roles in the positive relationship between ESTL and EGIB. The results reveal that ESTL influences employees' awareness of environmental issues and enhances their sense of responsibility for the environment. Employees will then actively exhibit green innovation behavior consistent with GOI and EC. Furthermore, this study also found that the indirect effect of ESTL on EGIB via EC is lower than via GOI.

Third, ESTL has a positive impact on EGIB through the path of GOI-EC. In other words, by delivering green values and environmental goals to the members of the organization, environmental transformational leaders can improve employees' recognition of the environmental goals of the organization, thus promoting employees' commitment to ecology and sustainability and exhibiting EGIB.

Finally, SOE positively moderates the effect of ESTL on GOI and EC and positively moderates the mediating effect of GOI and EC on the relationship between ESTL and EGIB. Employees with a high-level SOE tend to view that leaders' concern on environmental protection represents the organization's attitude toward environmental protection, and the positive relationship between ESTL and GOI will be strengthened, which in turn promotes employees to make more green innovation behaviors. Meanwhile, the positive relationship between ESTL and EC will be strengthened too, which then leads to higher EGIB.



### 5.2. Theoretical Contributions

This study contributes to the literature from several aspects. First, previous studies on green innovation tend to focus on the organization level [16,17,48], but pay little attention to green innovation behavior at the employee level. Although Li et al. (2019) discussed EGIB and provided evidence on the mechanism of how both endogenous attitude and exogenous attitude drive employees to make green innovation behavior [8]. However, little literature focused on the relationship between ESTL and EGIB. This study introduces ESTL and makes an in-depth analysis of the influence of ESTL on EGIB so as to enrich the theoretical research on EGIB.

Second, this study extends the understanding of the mediating mechanism of ESTL on EGIB. A few studies have investigated the mediating role of GOI between the relationship of ESTL and EGIB [33], but there is little attention paid to the mediating role of EC. Based on the social exchange theory, the mediating roles of GOI and EC between ESTL and EGIB are verified. On the one hand, from the cognition perspective, ESTL can enhance employees' GOI which helps employees to better understand organizational goals and enhance their GOI, which leads to EGIB. On the other hand, from the affection perspective, ESTL can motivate employees' EC by articulating a vision that elevates employees' confidence and expectations, and EC significantly enhances individual attitude toward the environment and then improves EGIB. In addition, this study further verifies the serial mediating role of the path GOI—EC in the influence mechanism of ESTL and EGIB. It is helpful to further reveal the influence mechanism of ESTL and EGIB.

Third, this study finds SOE exerting a moderating effect on the link of ESTL to GOI as well as the link of ESTL to EC. SOE reflects the degree to which employees equate the leader with the organization, including the perception of shared characteristics and the perception of shared experience. Different employees have different views in whether regarding the leader as an agent of the organization. When the SOE perceived by an employee is high, the employee will regard the leaders' statement of the green target as the willingness of the organization, which can effectively improve employees' GOI and EC. Therefore, this study extends the research of the boundary conditions under which the mediating effects of GOI and EC are strong or weak. Furthermore, most of the existing studies focus on the SOE in the conventional work situation, but there are few studies on SOE in the environmental protection situation. This study verified the moderating role of SOE in the process of ESTL effect on GOI and EC, which enriches the research on SOE.

### 5.3. Management Implications

In order to realize the transformation from the economic development model of enterprises to the mode of high efficiency, low energy consumption, and low emissions, enterprises must put forward higher requirements on the green management ability of leaders and the green innovation behavior of employees. Based on the theoretical model and empirical research results, this study provides management implications for enterprises to promote EGIB and improve the green innovation ability of enterprises.

First, enterprises should focus on cultivating ESTL. Specifically, the enterprise should improve the environmental protection knowledge and skills of the leaders through training so that leaders can set the environmental protection example for employees. In addition, enterprises should guide leaders to advocate and encourage EGIB and create an environment for green innovation. Moreover, enterprises should encourage leaders to pay more attention to the green development of employees and set personalized green training programs for employees so as to maximize the stimulation of EGIB.

Second, leaders should focus on employees' recognition of the organization's environmental goals and green values and commit themselves to make employees clear about their environmental responsibilities, which can improve employees' GOI and EC and stimulate EGIB.

Third, leaders should shape the green value that the green development of the organization is paramount and maintain the characteristics consistent with the green development

of the organization in daily behaviors and norms. Leaders can improve the effectiveness of ESTL and finally realize the green transformation of enterprises by making efforts to establish a community of organization, which can ultimately realize the green transformation of enterprises.

#### 5.4. Research Limitations and Future Prospects

First, the interpretation of the results may be limited by the fact that our respondents worked in China; our results may have been affected by China's unique political, economic, business, and cultural environment. Further, respondents came from the manufacturing industry, these samples may not be representative of the broader population of organizations. We suggest that future research should consider broader samples to explore the impact of ESTL on EGIB.

Second, all variables' scales are reported by the same respondents, which meant that a common method variance may be a potential problem. We used the Harman single-factor test to evaluate whether the common method bias had serious effects and found that it did not have a serious impact on this study. However, for future research, we suggest collecting data from different sources of information to reduce the likelihood of common method variance. Thus, we further encourage future researchers to take multiple steps to reduce the threat of common method variance. Researchers can collect data on EGIB with non-self-report measures, that is to say, employees' green innovation behavior can be collected from their superiors. Additionally, researchers can collect data at three different points in time [49]. For instance, data on ESTL and SOE collected at Time 1, GOI and EG collected at Time 2, and EGIB collected at Time 3.

**Author Contributions:** Investigation, W.T. and B.Z.; data curation, W.T.; writing—original draft preparation, J.Z.; writing—review and editing, H.W.; supervision, H.W. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Written informed consent has been obtained from the participant(s) to publish this paper.

**Data Availability Statement:** The datasets generated for this study are available on request from the corresponding author.

**Conflicts of Interest:** The author(s) declared no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

## References

1. Mi, L.; Sun, Y.; Gan, X.; Yang, H.; Jiang, Z. Promoting employee green behavior through the person-organization fit: The moderating effect of psychological distance. *Front. Psychol.* **2020**, *11*, 568385. [[CrossRef](#)]
2. Chen, Y.S.; Lai, S.B.; Wen, C.T. The influence of green innovation performance on corporate advantage in Taiwan. *J. Bus. Ethics* **2006**, *67*, 331–339. [[CrossRef](#)]
3. Yong, J.Y.; Yusliza, M.-Y.; Ramayah, T.; Fawehinmi, O. Nexus between green intellectual capital and green human resource management. *J. Clean. Prod.* **2019**, *215*, 364–374. [[CrossRef](#)]
4. Chen, Y.S. The driver of green innovation and green image—Green core competence. *J. Bus. Ethics* **2008**, *81*, 531–543. [[CrossRef](#)]
5. Chen, Y.S.; Chang, C.H. The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *J. Bus. Ethics* **2013**, *116*, 107–119. [[CrossRef](#)]
6. Zhou, L.; Cao, C. The hybrid drive effects of green innovation in Chinese coal enterprises: An empirical study. *Kybernetes* **2019**, *49*, 362–383. [[CrossRef](#)]
7. Li, W.; Bhutto, T.A.; Xuhui, W.; Maitlo, Q.; Zafar, A.U.; Bhutto, N.A. Unlocking employees' green creativity: The effects of green transformational leadership, green intrinsic, and extrinsic motivation. *J. Clean. Prod.* **2020**, *255*, 120229. [[CrossRef](#)]
8. Li, G.; Wang, X.; Wu, J. How scientific researchers form green innovation behavior: An empirical analysis of China's enterprises. *Technol. Soc.* **2018**, *56*, 134–146. [[CrossRef](#)]
9. Ones, D.S.; Dilchert, S. Employee green behaviors. In *Managing HR for Environmental Sustainability*; Jackson, S.E., Ones, D.S., Dilchert, S., Eds.; Jossey-Bass/Wiley: San Francisco, CA, USA, 2012; pp. 85–116.

10. Bass, B.M.; Avolio, B.J. Transformational Leadership and Organizational Culture. *Int. J. Public Adm.* **1994**, *17*, 541–554. [[CrossRef](#)]
11. Basu, R.; Green, S.G. Leader-Member Exchange and Transformational Leadership: An Empirical Examination of Innovative Behaviors in Leader-Member Dyads. *J. Appl. Soc. Psychol.* **1997**, *27*, 477–499. [[CrossRef](#)]
12. Choi, S.B.; Kim, K.; Ullah, S.M.E.; Kang, S.-W. How transformational leadership facilitates innovative behavior of Korean workers. *Pers. Rev.* **2016**, *45*, 459–479. [[CrossRef](#)]
13. Afsar, B.; Umrani, W.A. Transformational leadership and innovative work behavior. *Eur. J. Innov. Manag.* **2019**, *23*, 402–428. [[CrossRef](#)]
14. Conger, J.A. Charismatic and transformational leadership in organizations: An insider's perspective on these developing streams of research. *Leadersh. Q.* **1999**, *10*, 145–179. [[CrossRef](#)]
15. Robertson, J.L. The Nature, Measurement and Nomological Network of Environmentally Specific Transformational Leadership. *J. Bus. Ethics* **2018**, *151*, 961–975. [[CrossRef](#)]
16. Robertson, J.L.; Barling, J. Greening organizations through leaders' influence on employees' pro-environmental behaviors. *J. Organ. Behav.* **2013**, *34*, 176–194. [[CrossRef](#)]
17. Peng, J.; Chen, X.; Zou, Y.; Nie, Q. Environmentally specific transformational leadership and team pro-environmental behaviors: The roles of pro-environmental goal clarity, pro-environmental harmonious passion, and power distance. *Hum. Relat.* **2020**, *74*, 1864–1888. [[CrossRef](#)]
18. Mittal, S.; Dhar, R.L. Effect of green transformational leadership on green creativity: A study of tourist hotels. *Tour. Manag.* **2016**, *57*, 118–127. [[CrossRef](#)]
19. Joo, B.; Yoon, H.J.; Jeung, C. The effects of core self-evaluations and transformational leadership on organizational commitment. *Leadersh. Organ. Dev. J.* **2012**, *33*, 564–582. [[CrossRef](#)]
20. Ajzen, I. Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior<sup>1</sup>. *J. Appl. Soc. Psychol.* **2002**, *32*, 665–683. [[CrossRef](#)]
21. He, J.; Morrison, A.M.; Zhang, H. Being sustainable: The three-way interactive effects of CSR, green human resource management, and responsible leadership on employee green behavior and task performance. *Corp. Soc. Responsib. Environ. Manag.* **2021**, *28*, 1043–1054. [[CrossRef](#)]
22. Ghisetti, C.; Mancinelli, S.; Mazzanti, M.; Zoli, M. Financial barriers and environmental innovations: Evidence from EU manufacturing firms. *Clim. Policy* **2017**, *17*, S131–S147. [[CrossRef](#)]
23. Ben Arfi, W.; Hikkerova, L.; Sahut, J.-M. External knowledge sources, green innovation and performance. *Technol. Forecast. Soc. Chang.* **2018**, *129*, 210–220. [[CrossRef](#)]
24. Garcia-Machado, J.J.; Martínez-Ávila, M. Environmental Performance and Green Culture: The Mediating Effect of Green Innovation. An Application to the Automotive Industry. *Sustainability* **2019**, *11*, 4874. [[CrossRef](#)]
25. Jia, J.; Liu, H.; Chin, T.; Hu, D. The Continuous Mediating Effects of GHRM on Employees' Green Passion via Transformational Leadership and Green Creativity. *Sustainability* **2018**, *10*, 3237. [[CrossRef](#)]
26. Li, Z.; Xue, J.; Li, R.; Chen, H.; Wang, T. Environmentally Specific Transformational Leadership and Employee's Pro-environmental Behavior: The Mediating Roles of Environmental Passion and Autonomous Motivation. *Front. Psychol.* **2020**, *11*, 1408. [[CrossRef](#)]
27. Ashforth, B.E.; Mael, F. Social Identity Theory and the Organization. *Acad. Manag. Rev.* **1989**, *14*, 20–39. [[CrossRef](#)]
28. Gioia, D.A.; Thomas, J.B. Identity, Image, and Issue Interpretation: Sensemaking during Strategic Change in Academia. *Adm. Sci. Q.* **1996**, *41*, 370. [[CrossRef](#)]
29. Scott, S.G.; Lane, V.R. A Stakeholder Approach to Organizational Identity. *Acad. Manag. Rev.* **2000**, *25*, 43–62. [[CrossRef](#)]
30. Chen, Y. Green organizational identity: Sources and consequence. *Manag. Decis.* **2011**, *49*, 384–404. [[CrossRef](#)]
31. Foreman, P.; Whetten, D.A. Members' Identification with Multiple-Identity Organizations. *Organ. Sci.* **2002**, *13*, 618–635. [[CrossRef](#)]
32. Madjar, N.; Greenberg, E.; Chen, Z. Factors for radical creativity, incremental creativity, and routine, noncreative performance. *J. Appl. Psychol.* **2011**, *96*, 730–743. [[CrossRef](#)]
33. Chang, C.H.; Chen, Y.S. Green organizational identity and green innovation. *Manag. Decis.* **2013**, *51*, 1056–1070. [[CrossRef](#)]
34. Cohen, A. Commitment before and after: An evaluation and reconceptualization of organizational commitment. *Hum. Resour. Manag. Rev.* **2007**, *17*, 336–354. [[CrossRef](#)]
35. Klein, H.J.; Molloy, J.C.; Brinsfield, C.T. Reconceptualizing Workplace Commitment to Redress a Stretched Construct: Revisiting Assumptions and Removing Confounds. *Acad. Manag. Rev.* **2012**, *37*, 130–151. [[CrossRef](#)]
36. Klein, H.J.; Cooper, J.T.; Molloy, J.C.; Swanson, J.A. The assessment of commitment: Advantages of a unidimensional, target-free approach. *J. Appl. Psychol.* **2014**, *99*, 222–238. [[CrossRef](#)] [[PubMed](#)]
37. Raineri, N.; Paillé, P. Erratum to: Linking Corporate Policy and Supervisory Support with Environmental Citizenship Behaviors: The Role of Employee Environmental Beliefs and Commitment. *J. Bus. Ethics* **2016**, *137*, 211. [[CrossRef](#)]
38. Huang, S.; Ting, C.-W.; Li, M.-W. The Effects of Green Transformational Leadership on Adoption of Environmentally Proactive Strategies: The Mediating Role of Green Engagement. *Sustainability* **2021**, *13*, 3366. [[CrossRef](#)]
39. Davis, J.L.; Green, J.D.; Reed, A. Interdependence with the environment: Commitment, interconnectedness, and environmental behavior. *J. Environ. Psychol.* **2009**, *29*, 173–180. [[CrossRef](#)]
40. Cantor, D.E.; Morrow, P.C.; Montabon, F. Engagement in Environmental Behaviors Among Supply Chain Management Employees: An Organizational Support Theoretical Perspective. *J. Supply Chain Manag.* **2012**, *48*, 33–51. [[CrossRef](#)]

41. Xing, X.; Wang, J.; Tou, L. The Relationship between Green Organization Identity and Corporate Environmental Performance: The Mediating Role of Sustainability Exploration and Exploitation Innovation. *Int. J. Environ. Res. Public Health* **2019**, *16*, 921. [[CrossRef](#)]
42. Dutton, J.E.; Dukerich, J.M. Keeping An Eye on the Mirror: Image and Identity In Organizational Adaptation. *Acad. Manag. J.* **1991**, *34*, 517–554. [[CrossRef](#)]
43. Meyer, J.P.; Becker, T.E.; van Dick, R. Social identities and commitments at work: Toward an integrative model. *J. Organ. Behav.* **2006**, *27*, 665–683. [[CrossRef](#)]
44. Eisenberger, R.; Karagonlar, G.; Stinglhamber, F.; Neves, P.; Becker, T.E.; Gonzalez-Morales, M.G.; Steiger-Mueller, M. Leader-member exchange and affective organizational commitment: The contribution of supervisor’s organizational embodiment. *J. Appl. Psychol.* **2010**, *95*, 1085–1103. [[CrossRef](#)]
45. Eisenberger, R.; Shoss, M.K.; Karagonlar, G.; Gonzalez-Morales, M.G.; Wickham, R.E.; Buffardi, L.C. The supervisor POS-LMX-subordinate POS chain: Moderation by reciprocity awareness and supervisor’s organizational embodiment. *J. Organ. Behav.* **2014**, *35*, 635–656. [[CrossRef](#)]
46. Costa, S.; Daher, P.; Neves, P.; Velez, M.J. The interplay between ethical leadership and supervisor organizational embodiment on organizational identification and extra-role performance. *Eur. J. Work Organ. Psychol.* **2021**, 1–12. [[CrossRef](#)]
47. Woszczynski, A.B.; Whitman, M.E. The Problem of Common Method Variance in IS Research. *Handb. Inf. Syst. Res.* **2011**, 66–77. [[CrossRef](#)]
48. Zhang, Y.; Sun, J.; Yang, Z.; Li, S. Organizational Learning and Green Innovation: Does Environmental Proactivity Matter? *Sustainability* **2018**, *10*, 3737. [[CrossRef](#)]
49. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [[CrossRef](#)]