

## Article

# The Continuous Mediating Effects of GHRM on Employees' Green Passion via Transformational Leadership and Green Creativity

Jianfeng Jia <sup>1</sup>, Huanxin Liu <sup>2</sup> , Tachia Chin <sup>3</sup> and Dongqing Hu <sup>4,\*</sup><sup>1</sup> School of Business Administration, Northeastern University, Shenyang 110169, China;

jianfengjia@163.com

<sup>2</sup> School of Management, Shandong University, Jinan 250100, China; huanxinsdu@163.com<sup>3</sup> School of Management, Hangzhou Dianzi University, Hangzhou 310012, China; tachia1231@yahoo.com.sg<sup>4</sup> Antai College of Economics and Management, Shanghai Jiao Tong University, Shanghai 200030, China

\* Correspondence: hudongqing1206@163.com; Tel.: +86-18917066048

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**Abstract:** Responding to environmental challenges is a new manifestation of innovation for organizations, which enables firms to gain competitive advantages by conducting innovative activities for not only themselves, but also for the whole society. In this context, much attention has been paid to “green creativity.” However, few studies have explored the impact of green creativity from the perspective of interactions between individuals and organizational contexts. Therefore, we aimed to explain the variance in employees’ green creativity by examining three factors outside the organizational context: transformational leadership, green human resource management (GHRM), and individual factors including employees’ green passion. Drawing from the ability–motivation–opportunity theory, we found that transformational leaders can inspire employees’ green passion through influencing GHRM, and ultimately positively affect employees’ green creativity. Data collected from two sources (employees and human resources managers) in medical firms in northeast China at two time points demonstrated the important effects of transformational leadership, GHRM, and employees’ green passion on green creativity, thus offering new theoretical insights and practical suggestions.

**Keywords:** transformational leadership; green human resource management; green passion; green creativity

## 1. Introduction

Creativity refers to the production of original, novel, and useful ideas [1]. As the primary impetus of innovation, it greatly benefits organizations by enabling them to adapt to the complex and ever-changing economic environment [2]. The recent impact of environmental issues, particularly global climate change, on economic development, cannot be ignored. Responding to environmental challenges, therefore, can be considered as a new manifestation of innovation for organizations to gain competitive advantages by conducting innovative activities for greater good [3,4]. Against this background, the new notion of “green creativity” has been proposed. Green creativity refers to the production novel and useful ideas with environmentally friendly influences on products, services, processes, and practices within organizations [3].

However, improving green creativity depends on cooperation between company environmental strategies and corresponding human resource management (HRM) practices. In other words, if a company wants to achieve good environmental management and enhance green creativity, it needs to encourage its employees to actively participate [2,5]. Research on green human resource

management (GHRM) provides new opportunities for the research of green creativity and HRM within organizations. GHRM, which mainly emphasizes the aspects of HRM practices toward the protection of environmental and the ecological influence of the companies, is the explicit link between corporate environmental strategy and employees' green behavior [2,6]. However, the assumption that GHRM may be likely to enhance the green creativity of a firm has not been established empirically [7]. The factors that give rise to GHRM, including questions about how HRM practices influence employees' green creativity, have received limited attention, besides a few studies that examine some specific practices of GHRM (e.g., green training) for environmental management [8,9]. One of the forms of originality for this paper therefore lies in examining the processes of how GHRM can motivate employees to engage in green activities and produce green ideas, which can handle the specific challenge of managing environmental concerns through a set of HRM practices (including green recruitment and selection, green training, green performance management, green pay and reward, green involvement) [10].

According to the ability–motivation–opportunity theory (AMO), personal ability and motivation form the basis for action, which will then happen if proper opportunities are provided by the organization [11]. In the pursuit of improving employees' green creativity, GHRM as one organizational context can enhance the green ability of employees through recruiting those who have an awareness of environmental protection, and providing certain training activities about environmentally friendly skills, inspiring the motivation of engaging green activities by establishing fair green performance management systems and distinguishing rewards and punishments, and also making a platform for employees through green involvement [10]. However, GHRM alone is not necessarily sufficient to achieve a green competitive advantage. The influences of other organizational contexts (e.g., leadership, firms' support) and individual factors (e.g., employees environmental attitude) may also be necessary for affecting employees' ability, motivation, and opportunities for green creativity [12,13]. Therefore, in the light of the above considerations, it is necessary to find the determinants of employees' green creativity. The effects of various factors on individual workplace creativity have been widely discussed in the literature [14] and can be summarized at three levels: the individual level (e.g., self-concept, personality traits, emotions) [12,15,16], the team level (e.g., style and behavior of team leaders, exchanges between leaders, exchanges between team members) [13,17], and the organization level (e.g., reward system, performance compensation, job design) [18]. However, few studies have explored the effects on workplace creativity from the perspective of interactions between individuals and organizational contexts (including the team and organization levels), particularly in the field of environmental management [19]. Therefore, we aimed to fill this research gap.

We need to consider the interactive influences of other organizational contexts and individual factors that affect employees' ability, motivation, and opportunities for green creativity. Mobilizing employees toward intra-organizational and cross-functional integration to enhance their green creativity is generally recognized as the responsibility of high-level leaders, often with only modest participation by human resources (HR) professionals [20]. Nurturing green creativity among employees to promote green competitiveness is the primary concern of managers [3,21]. Leadership plays a crucial role in enhancing creativity among employees. Studies have shown that transformational leadership significantly enhances employee motivation, and increases opportunities to generate new ideas [22,23]. However, even outstanding GHRM with excellent leadership cannot stimulate employees' green creativity if employees lack the enthusiasm to engage [24].

Therefore, in this study, we consider how transformational leadership can influence the extent to which GHRM and employees' green passion contribute to enhancing the green creativity of firms. More specifically, we argue that transformational leadership, GHRM, and employees' green passion are all essential for employees' AMO for action, which in turn contributes to superior green creativity. We seek to explain some of the variance in employees' green creativity by examining three factors separately from organizational contexts: transformational leadership, GHRM and individual factors including employees' green passion. Consistent with the AMO paradigm [11,25,26], our theoretical

arguments (Figure 1) assume that transformational leadership, GHRM, and employees' green passion together create the necessary conditions for employees to achieve green creativity. Transformational leadership, via the mediation of GHRM, can also increase employees' green passion to achieve this goal.

Ten years ago, the development of Chinese companies was more concerned with economic indicators. Many firms did not view environmental management as a necessary investment, and they treated it as an obstacle to their performance and profitability [19]. In recent years, however, the haze problem in northern and eastern China has become more serious. It is recognized that environmental issues not only play an important role in human health, but also in economic and social development [27]. As president Xi Jinping's famous saying goes, "it is necessary to have Jinshan Yinshan, but also clean water and green mountains". The Chinese government has realized that economic development and the protection of the environment were equally important, and it issued various legislative and administrative measures to address the growing environmental problems [28]. More importantly, the transformation of the economic development mode and the protection of ecological civilization even have been written into China's national five-year plan [7]. Public awareness of environmental protection is gradually increasing, with people becoming more sensitive to the environmental destruction caused by corporations, and consumers are increasingly favoring green products. All of this illustrates the simple fact in China that environmental protection has quickly become a mainstream issue, forcing businesses to confront these challenges [4,28]. However, challenges can only be turned into opportunities if companies can make breakthroughs in environmental management.

Therefore, it is both theoretically and practically important to understand how transformational leadership can influence the extent to which GHRM and employees' green passion contributes to enhancing green creativity in firms, particularly considering the current trend of taking ecology concerns as a strategic priority.

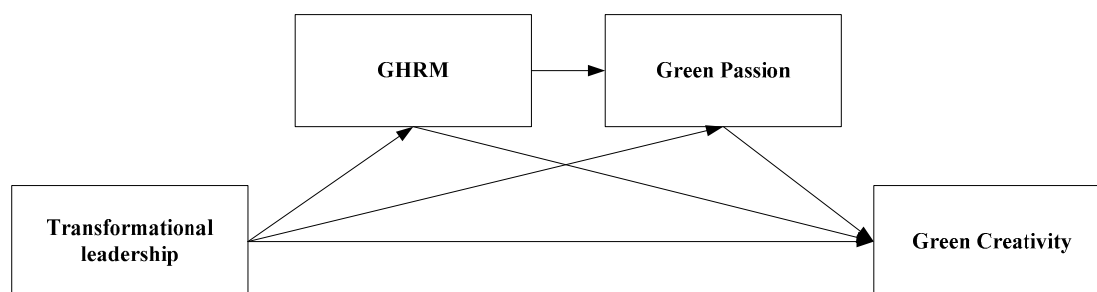


Figure 1. Hypothesized theoretical model.

## 2. Literature Review and Research Hypotheses

### 2.1. Ability–Motivation–Opportunity Theory

The AMO theory [11] is an important theoretical paradigm in the strategic HRM literature [25,26]. Its central tenet draws attention to the impact of HR systems on overall employees behavior performance at the organizational level. A popular model named "performance = f{employees' ability, motivation and opportunity to participate}" argues that organizational interests are best satisfied by an HR system that aims to provide proper opportunities and platforms for skilled employees [29]. AMO theory stresses that employees' abilities, motivations, and opportunities contribute to organizational performance; this is an integrating perspective illustrating why and how leaders and strategic HRM practices promote firm performance [11,30].

Workplace creativity is often referred to original, novel, and useful ideas generated by individuals in an organizational context. Workplace creativity can improve company performance or, rather, employee creativity belongs to the first crucial stage of innovation that makes growth happen [12,14]. Competent and motivated individuals may not necessarily guarantee good

behavioral performance—providing the right opportunities and platforms cannot be ignored [29]. As an indispensable part of workplace creativity, employees' green creativity can be seen as the same process. The main difference is that employees' green creativity is more concerned with the environment. According to this logic, the generation of novel and useful environmental ideas created via the interaction between individual and situational factors will inevitably be influenced by AMO factors [31]. Therefore, our article used AMO theory to analyze individuals' green creativity in the workplace.

Due to its close association with the field of strategic HRM, improving GHRM has almost always been conceptualized in terms of a behavioral perspective of strategic HRM [32]. This assumes that under an HRM system, planned HR deployments and activities are intended to enable the organization to achieve its environmental goals [33,34]. For example, Jabbour (2013) argued that making full use of HRM measures like training employees and appraising their environmental performance can help a company to vastly improve its environmental performance and enhance its green competitiveness [35].

However, to improve green competence, the support role played by leaders and employees' participation cannot be separated from this process [5]. Employees are the main actors in the implementation of various GHRM measures, are in touch with production processes and can detect potential improvements and opportunities for new ideas. However, it is worth noting that both the implementation of GHRM measures and employee development of green creativity are within the leadership jurisdiction [36]. Below, we demonstrated the importance of two valuable factors—transformational leadership and employees' green passion—in the strategic contribution of GHRM to green creativity in the workplace.

## 2.2. Transformational Leadership and Employees' Green Creativity

Proper leadership has great potential to enhance employees' green creativity by motivating them and fostering an atmosphere that is conducive to green creativity [37–40]. Although scholars still debate which type of leadership is beneficial to organizational creativity, research has already emphasized the significance of transformational leadership during this process [37,41].

According to Avolio et al. (1991) [42] and Avolio (2004) [43], transformational leadership tries to promote the awareness of subordinates through higher ideals such as freedom, justice, fairness, and humanitarianism, and encourages subordinates to value organizational interests over personal interests. Four behavioral components—inspirational motivation, charisma, personal attention, and intellectual stimulation—determine the ability of transformational leaders to inspire their followers [37].

Inspirational motivation refers to a desirable vision and high expectations that the leader applies to arouse subordinates' work enthusiasm, strengthening their commitment to the organization's goals and vision and making them more willing to contribute green ideas for the future [44]. Charisma (or idealized influence) arouses subordinates' strong emotional identity, making them more willing to invest in actions that are consistent with the leader's goals [22]. Therefore, when an organization is committed to enhancing green creativity, employees under transformational leadership will be eager to engage in green creativity, thereby contributing more green ideas. Personal attention involves leaders actively listening to employees through giving priority to their needs, sharing experiences with them, using communication skills rather than power, and assisting their hard work by providing them with a framework to help them overcome challenges and caring about each individual's unique abilities and interests [45]. In this approach, transformational leadership not only stimulates employees' green creative motivation and enhances their ability to cope with uncertainty and overcome challenges, but also provides a platform and opportunity for them by encouraging the creation of green ideas [46]. Finally, intellectual stimulation indicates the leader's emphasis on creating an open environment, pursuing new knowledge, and respecting the pioneering spirit. This will inspire employees' initiative awareness and give them opportunities to challenge traditional values and beliefs, and generate new green ideas [47,48]. Taken together, the above arguments lead to the following hypothesis:

**Hypothesis 1 (H1).** *Transformational leadership is positively associated with employees' green creativity.*

### 2.3. Transformational Leadership, GHRM, and Employees' Green Creativity

Organizational environmental strategy can positively influence a firm's green creativity [49]. In an environmentally-friendly atmosphere, the efficient use of raw materials and even unlikely suggestions that can result in improved environmental performance are encouraged [50]. GHRM reflects a firm's orientation and strategy toward environmental protection, leverages executives to pay more attention to the process, and encourages employees to engage in reducing environmental pollution in the work area [51–54]. In this study, several lines of argument support our expectation of a positive relationship. We suggest that GHRM plays a mediating role between transformational leadership and employees' green creativity.

Transformational leadership fully embodies the values, attitudes, beliefs, and behaviors of senior managers, and has a crucial influence on a company's HRM practices [6]. Leaders have an important influence on the formulation of HRM concepts, goals, and policies [55], but HRM practices have become an important platform for senior managers to deliver organizational strategies and visions [56]. Studies have shown that the intellectually inspired dimension of transformational leadership has a significant positive effect on performance management, talent management, and employee efficiency [44]. Therefore, when an organization pursues an environmental goal, a transformational leader can effectively convey green goals to HRM and make a positive difference.

Although the link between HRM and creativity has found support in many studies [57–60], there is little research connecting GHRM to innovation at the individual level [2]. Based on the AMO framework, we find that the concrete GHRM measures can be categorized as ability-enhancing, motivation-enhancing, and opportunity-enhancing GHRM practices. All play an important role in generating employees' green creativity, which is a necessary part of innovation [2,61].

First, ability-enhancing GHRM practices mainly include green recruitment and selection, and green training. Specifically, green recruitment and selection refers to emphasizing the employee's attitudes, knowledge, and behavior toward the environment when recruiting, and tends to select employees with great environmental awareness and environmental behaviors. Compared with subordinates who lack environmental awareness and environmental protection skills, employees recruited by this measure are better qualified to understand the company's environmental management objectives, and solve problems based on environmental protection, which stimulate their motivations for green creativity [6]. Green training refers to a system of activities that motivating employees to understand the importance of environmental protection and enhance their environmental sensitivity, giving them opportunities to learn environmental protection skills and building an environmentally friendly organizational climate that all employees are encouraged to engage with [10,35].

Second, motivation-enhancing GHRM practices include green performance management and green pay, and rewards ranging from financial to non-financial [62]. Green performance management means that there exists a system of evaluating standards and practices to evaluate the performance of employees in the specific implementation of environmental management [8]. It establishes a series of green criteria, and the same time provides some guides and feedback with those who directly involved, which will inspire employees' motivation to participate in the green practices [10]. For example, if you do not meet the energy saving indicator, your bonus will be canceled this month. Employees who feel that their efforts are being fairly rewarded will tend to be more willing to work hard for the organization's environmental goals [35]. More importantly, alongside financial incentives, non-financial rewards such as recognition and praise help meet employees' internal needs, thereby enhancing the intrinsic motivation of individual creative behavior and increasing their input in the creative process [10,25].

Finally, opportunity-enhancing GHRM practices can be described as green involvement. Green involvement means that there is a platform for employees to engage in environmental management, and they have some degree of independence and freedom in their tasks, which can



facilitate harmonious relationships between firms and employees, encourage employees to participate more in organizational citizenship behaviors relating the firm's environmental goal, and inspire employees to promote more green ideas [6,63].

Thus, we propose the following hypothesis:

**Hypothesis 2 (H2).** *Transformational leadership, mediated by GHRM, is positively associated with employees' green creativity.*

#### 2.4. Transformational Leadership and Employees' Green Passion

Passion results in a series of positive emotional experiences such as happiness, pride, and a sense of accomplishment, which in turn lead to engagement in behaviors [64]. Individuals are more likely to be passionate about something that has social significance [65]. Green passion is also referred to as a positive emotion that leads to an individual being more willing to engage in pro-environmental behaviors [66]. A sense of calling and workplace membership can invoke green passion when employees have a rich knowledge and awareness of environmental degradation [67]. A feeling of optimism can also help to arouse environmental passion [65].

The impact of leadership on employees' green behavior has been investigated in numerous studies [36,65,68]. The green behavior of leaders often demonstrates a company's strategic environmental objectives, so that leaders play a dominant role in assisting employees to deepen their understanding of the social importance of corporate environmental goals [37]. Transformational leadership, an important factor influencing leader-follower value congruence, can not only fulfil this kind of role effectively, but it can also actively mobilize employees' positive emotions and create an optimistic atmosphere [56]. First, charisma will arouse subordinates' strong emotional identification with their leader, and increase their willingness to understand the green goals pursued by the leader [22]. Second, inspirational motivation means that the leader will contribute a desirable vision and high expectations to arouse subordinates' green work enthusiasm, which directly invokes employees' green passion [44]. Third, personal attention emphasizes that leaders can respect employees' needs and interests, use communication skills rather than power to communicate with employees, and help them overcome challenges at work, resulting in more positive emotions for employees [45]. Finally, intellectual stimulation inspires employees' initiative awareness and gives them opportunities to challenge traditional values and beliefs, increasing their confidence, optimism, and willingness to actively engage in solving environmental protection issues [19,47,48]. All of these factors can motivate employees' environmental enthusiasm. Therefore, we propose the following hypothesis:

**Hypothesis 3 (H3).** *Transformational leadership is positively associated with employees' green passion.*

#### 2.5. Transformational Leadership, GHRM, and Employees' Green Passion

Environment protection is conducive to the sustainable development of society. Green human resource management is an important embodiment of the company's environmental protection strategy. It conveys the value and social impact of environmental protection to employees [51]. Green training can facilitate the cognitive and psychological processes of how employees can strive to be good to environment, can enhance their knowledge and skills on how to achieve this goal [66]. Through green pay and reward, it can be recognized and applauded for employees' efforts and contributions to processes on promoting environmental sustainability, which is beneficial to arouse employee green passion [10]. Therefore, GHRM is vital beneficial to the generate of green passion.

The theoretical reasonings above have assumed that the positive relationship between transformational leadership and employees' green creativity (refer to Hypothesis 1), which is mediated by GHRM (Hypothesis 2), and that transformation leadership positively relates to green passion (see Hypothesis 3). Considering that the arguments above imply that GHRM should positively associate green passion, we take together the foregoing discussions and further propose:

**Hypothesis 4 (H4).** *Transformational leadership is positively associated with employees' green passion, mediated by GHRM.*

### 2.6. Employees' Green Passion and Green Creativity

Many studies focus on the impact of individual characteristics on creativity [16,69,70], part of which are concerned about the influence of individual state traits on creativity. Individual state traits are referred as motions, needs, and preferences that is prone to change as time or other circumstances change [69]. When experiences a strong passion, an individual will more energized, motivated, and inspired to engage in their task, the scope of their attention will be enlarged and the flexibility of their cognition will be enhanced, which will enhance their ability to seize the opportunity and generate new ideas [66]. As a positive emotion, employees' green passion can inspire employees' green creativity. Accordingly, we hypothesize that:

**Hypothesis 5 (H5).** *Transformational leadership is positively associated with employees' green creativity, and mediated by employees' green passion.*

**Hypothesis 6 (H6).** *Transformational leaders can inspire employees' green passion through influencing green human resource management, and ultimately positively can affect employees' green creativity.*

## 3. Methods

### 3.1. Sample and Procedure

For this study, we applied a questionnaire survey to verify the hypotheses from medical firms located in the northeastern part of China. There are two reasons to select these firms as research objects. First, both the medical production process and the product itself may pollute air, land, or water resources, which leads these kind of firms to face strict environmental regulations. The medical companies need to enhance their environmental management and to develop green products, which are great beneficial for them to turn the environmental challenges to advantages. Second, due to the climatic factors in autumn and winter in northern China, environmental problems such as haze can be aggravated. Therefore, some enterprises in this region that may have environmental pollution problems will face more stringent supervision. So it is meaningful to investigate the influences of transformational leadership, GHRM, and employees' green passion on how to inspire employees' green creativity when environmental trends become a huge challenge for them. We used a survey for examining the relationship shared by transformational leadership, GHRM, employees' green passion, and employees' green creativity. All participants were informed that participation was voluntary and that their responses were confidential. Subsequently, the questionnaires were randomly mailed by using postage-paid envelopes to the company.

Data were collected from two sources (the employees and the HR managers) at two points in time. At Time 1, we mailed the questionnaires, mainly including transformational leadership and GHRM to the HR managers of the targeted firms ( $n = 150$ ) in the region. The HR managers provided their demographic information and ratings to assess GHRM, and the same time they distributed surveys to employees who are responsible for ratings transformational leadership by thinking about the Chief Executive Officer (CEO) of his/her respective company. We used the employees' perceived transformational leadership to measure the attribute of the CEOs' transformational leadership, which has been proved by Waldman et al. (2001) [71]. At Time 2, approximately three months later, HR managers distributed a second survey that asked employees to rate their green passion and green creativity. From the invitations, this study distributed 150 questionnaires and received 120 valid responses. The response rate was 80%. Table 1 displays the descriptive statistics of the 120 usable responses. A majority of the survey participants were male (64.17%), aged 36–40 (30.50%).

**Table 1.** Demographic characteristics of respondents.

| Characteristic   | Categories | N  | %      |
|------------------|------------|----|--------|
| Gender           | male       | 77 | 64.17% |
|                  | female     | 43 | 35.83% |
| Age <sup>a</sup> | under 25   | 9  | 7.50%  |
|                  | 26–30      | 34 | 28.33% |
|                  | 31–35      | 14 | 11.67% |
|                  | 36–40      | 36 | 30.50% |
|                  | 41–45      | 14 | 11.67% |
|                  | 46–50      | 13 | 10.33% |

Note: N = 120. <sup>a</sup> In order to facilitate statistics, the age is divided into age groups, but the research objects actually filled in the questionnaire is the age with a specific number.

### 3.2. Measures

We refer to the past literature to design questionnaire items. The questionnaires were developed in English. However, for collecting the data effectively, the questionnaires were translated into Chinese with the help of two different bilingual experts for protecting the conversion quality [72]. Before the questionnaire was finalized and surveyed, some employees of the target companies were required to assess the suitability about the design and wording of questionnaire. We modified the questionnaire in the first pretest according to the opinions of the pre-examinees. All responses were made using a 5-point Likert-scale (1 = ‘strongly disagree’ and 5 = ‘strongly agree’) unless indicated otherwise.

**Transformational leadership:** The items of transformational leadership adopted nine items developed by Lin, Dang and Liu [73], who made some adaptations from the measures of Waldman et al. [71] and McColl-Kennedy and Anderson [74]. The sample items included: “The leader shows determination when accomplishing goals”, “The leader makes people have complete confidence in him/her”, and “The leader transmits a sense of mission”. The Cronbach’s Alpha was 0.89 (see Table 3).

**Green human resource management:** HR managers provided ratings of GHRM using 18 items developed by Tang, Chen, Jiang, Paillé, and Jia [10], which include green recruitment and selection, green training, green performance management, green compensation, and green involvement. Sample items included “We use green performance indicators in our performance management system and appraisals”, and “We develop training programs in environmental management to increase environmental awareness, skills and expertise”. The Cronbach’s alpha was 0.96 (see Table 3).

**Employees’ green passion:** Employees provided ratings of green passion using 10 items developed by Robertson and Barling [65]. Sample items included “I am passionate about the environment”, and “I enjoy engaging in environmentally friendly behaviors”. The Cronbach’s alpha was 0.89 (see Table 3).

**Employees’ green creativity:** Employees provided ratings of green creativity using three items developed by Chen and Chang [3]. Sample items included “The members of the green product development project suggest new ways to achieve environmental goals”, “The members of the green product development project propose new green ideas to improve environmental performance”, and “The members of the green product development project promote and champion new green ideas to others”. The Cronbach’s alpha was 0.76 (see Table 3).

**Control variables:** Several individual-level variables were included in our analyses to control for their influence on green-related outcomes. We controlled for the employee’s age and gender, as some evidence suggested that they might influence environmental attitudes and behaviors. For this same reason, we controlled for employees’ tenure with their leaders.



## 4. Results

### 4.1. Confirmatory Factor Analysis

In order to evaluate the distinctiveness of the key variables including transformational leadership, GHRM, employees' green passion, and employees' green creativity, we conducted confirmatory factor analyses (CFAs) using AMOS 22.0. As shown in Table 2, the four-factor model provided a good fit to the data ( $\chi^2 = 200.20$ ,  $df = 129$ ,  $RMSEA = 0.07$ ,  $CFI = 0.96$ ,  $TLI = 0.95$ ,  $SRMR = 0.05$ ). Specifically, the fitness of the four-factor model was significantly better than the three-factor model, the two-factor model and the single-factor model with the data (see Table 2 for details), which indicated that the measurement had good discriminant validity. The single-factor model fitted the worst, indicating that the common method bias problem may exist, but that it is not serious. In addition, the analysis results showed that the factor loading coefficients of all the items in the four-factor model were significant, and greater than 0.5, which reflected that the measurement had good convergence validity. Given these results, all four constructs were applied in subsequent analyses.

**Table 2.** Results of CFA for the measures of the variables studied.

| Model                           | $\chi^2$ | Df  | RMSEA | TLI  | CFI  | SRMR |
|---------------------------------|----------|-----|-------|------|------|------|
| Four-factor model               | 200.20   | 129 | 0.07  | 0.95 | 0.96 | 0.05 |
| Three-factor model <sup>a</sup> | 345.13   | 132 | 0.12  | 0.84 | 0.87 | 0.07 |
| Three-factor model <sup>b</sup> | 366.63   | 132 | 0.12  | 0.83 | 0.85 | 0.08 |
| Two-factor model <sup>c</sup>   | 539.79   | 134 | 0.16  | 0.71 | 0.74 | 0.10 |
| One-factor model                | 827.43   | 135 | 0.21  | 0.50 | 0.56 | 0.14 |

Note:  $N = 120$ . <sup>a</sup> employees' green creativity and employees' green passion combined; <sup>b</sup> employees' green creativity and GHRM combined; <sup>c</sup> employees' green creativity, employees' green passion and GHRM combined.

### 4.2. Descriptive Statistics

Table 3 summarizes the mean, variance, and correlation coefficients of the variables. As can be seen that transformational leadership is positively related to green creativity ( $r = 0.31$ ,  $p < 0.01$ ), GHRM ( $r = 0.47$ ,  $p < 0.01$ ) and employees' green passion ( $r = 0.36$ ,  $p < 0.01$ ). At the same time, employees' green passion showed a significant positive correlation with green creativity ( $r = 0.56$ ,  $p < 0.01$ ). These results are consistent with the direction of our research hypothesis, providing preliminary evidence for the validation of the hypothesis.

**Table 3.** Descriptive statistics, reliability estimates, and study variable intercorrelations.

| Variable                       | 1        | 2       | 3      | 4                   | 5                   | 6                   | 7                   |
|--------------------------------|----------|---------|--------|---------------------|---------------------|---------------------|---------------------|
| 1. Age                         | 1        |         |        |                     |                     |                     |                     |
| 2. Gender <sup>a</sup>         | −0.35 ** | 1       |        |                     |                     |                     |                     |
| 3. Tenure with the leader      | 0.56 **  | −0.15   | 1      |                     |                     |                     |                     |
| 4. Transformational leadership | 0.13     | −0.02   | 0.18 * | (0.89) <sup>b</sup> |                     |                     |                     |
| 5. GHRM                        | −0.11    | 0.17    | 0.09   | 0.47 **             | (0.91) <sup>c</sup> |                     |                     |
| 6. Green passion               | −0.04    | 0.06    | 0.09   | 0.36 **             | 0.52 **             | (0.89) <sup>d</sup> |                     |
| 7. Green creativity            | −0.05    | 0.25 ** | −0.04  | 0.31 **             | 0.57 **             | 0.56 **             | (0.76) <sup>e</sup> |
| Mean                           | 35.37    | 0.36    | 5.71   | 4.01                | 3.88                | 4.14                | 3.84                |
| SD                             | 7.26     | 0.48    | 4.93   | 0.58                | 0.50                | 0.56                | 0.58                |

Note:  $N = 120$ ; GHRM: green human resource management; SD standard deviation; \*\*  $p < 0.01$ , \*  $p < 0.05$ . <sup>a</sup> Gender: male = 0; female = 1; <sup>b</sup> The Cronbach's alpha of transformational leadership; <sup>c</sup> The Cronbach's alpha of GHRM; <sup>d</sup> The Cronbach's alpha of green passion; <sup>e</sup> The Cronbach's alpha of green creativity.

### 4.3. Hypotheses Testing

Hypothesis 1 proposed the positive effects of transformational leadership on employees' green creativity. As can be seen in Table 4, results of the analysis indicated that transformational leadership had a significant positive effect on green creativity, thus, Hypothesis 1 was well supported ( $M7, \beta = 0.32, p < 0.01$ ). Hypothesis 2 indicated that GHRM mediated the relationship between transformational leadership and employees' green creativity. Transformational leadership behavior also had a significant positive effect on GHRM ( $M2, \beta = 0.46, p < 0.01$ ). Model 8 illustrated that GHRM was positively related to green creativity ( $M8, \beta = 0.53, p < 0.01$ ). However, after adding mediating variables (GHRM), the positive influence of transformational leadership on green creativity was affected and non-significant ( $M8, \beta = 0.07, p$  value was not significant), which indicated that the GHRM played a completely mediating role in the relationship to transformational leadership and green creativity. The results well supported Hypothesis 2.

Hypothesis 3 predicted that there existed a positive relationship between transformational leadership and employees' green passion. As shown in Table 3, transformational leadership behavior had a significant positive effect on employees' green passion; thus, Hypothesis 3 was supported ( $M4, \beta = 0.35, p < 0.01$ ). Hypothesis 4 predicted that GHRM also played a mediated role between transformational leadership and employees' green passion. First it has been proven that transformational leadership behavior had a significant positive effect on GHRM ( $M2, \beta = 0.46, p < 0.01$ ). Secondly, in Model 5 and Model 10 of Table 3, GHRM was positively related to employees' green passion ( $M5, \beta = 0.35, p < 0.01$ ). However, after adding mediating variables (GHRM), the positive influence of transformational leadership on green passion was affected and non-significant ( $M9, \beta = 0.14, p$  value was not significant), which indicated that GHRM played a completely mediating role in the relationship between transformational leadership and employees' green passion. Thus, Hypothesis 4 were supported.

Hypothesis 5 referred that employees' green passion could mediated the relationship between transformational leadership and employees' green creativity. First, it has been proven that transformational leadership behavior had a significant positive effect on employees' green passion ( $M4, \beta = 0.35, p < 0.01$ ) and green creativity ( $M7, \beta = 0.32, p < 0.01$ ). Secondly, Model 9 showed that employees' green passion was positively related to green creativity ( $M9, \beta = 0.51, p < 0.01$ ). However, after adding mediating variables (green passion), the positive influence of transformational leadership on green creativity was affected and non-significant ( $M9, \beta = 0.14, p$  value was not significant), which indicated that the employees' green creativity played a completely mediating role in the relationship between transformational leadership and green creativity, so that Hypothesis 5 was supported. Hypothesis 6 proposed a continuous mediation model, which was also supported. Table 5 provided further evidence, and from this, we can also see that the path transformation leadership  $\rightarrow$  GHRM  $\rightarrow$  employees' green passion  $\rightarrow$  green creativity was significant at the 95% confidence interval, which meant that Hypothesis 6 was validated.

**Table 4.** Parameter estimates for the proposed model.

|                             | GHRM    |         | Green Passion |          |          | Green Creativity |          |          |          |          |
|-----------------------------|---------|---------|---------------|----------|----------|------------------|----------|----------|----------|----------|
|                             | Model 1 | Model 2 | Model 3       | Model 4  | Model 5  | Model 6          | Model 7  | Model 8  | Model 9  | Model 10 |
| <b>Controls</b>             |         |         |               |          |          |                  |          |          |          |          |
| Age                         | −0.18   | −0.20   | −0.11         | −0.12    | −0.03    | 0.07             | 0.06     | 0.16     | 0.12     | 0.18     |
| Gender                      | 0.17    | 0.15    | 0.09          | 0.08     | 0.01     | 0.31 **          | 0.30 **  | 0.22 *   | 0.26 **  | 0.22 **  |
| Tenure with the leader      | 0.23 *  | 0.14    | 0.17          | 0.10     | 0.04     | −0.02            | −0.08    | −0.16    | −0.14    | −0.17 *  |
| <b>Independent Variable</b> |         |         |               |          |          |                  |          |          |          |          |
| Transformational leadership |         | 0.46 ** |               | 0.35 **  | 0.15     |                  | 0.32 **  | 0.07     | 0.14     | 0.01     |
| <b>Mediators</b>            |         |         |               |          |          |                  |          |          |          |          |
| GHRM                        |         |         |               |          | 0.43 **  |                  |          | 0.53 **  |          | 0.37 **  |
| Green passion               |         |         |               |          |          |                  |          |          | 0.51 **  | 0.38 **  |
| F                           | 2.76 *  | 9.83 ** | 1.08          | 4.45 **  | 8.05 **  | 3.27 *           | 5.78 **  | 12.99 ** | 14.11 ** | 16.28 ** |
| R <sup>2</sup>              | 0.08    | 0.28    | 0.03          | 0.15     | 0.29     | 0.09             | 0.19     | 0.40     | 0.42     | 0.50     |
| ΔF                          | 2.76 *  | 28.75   | 1.08          | 14.13 ** | 19.21 ** | 3.27 *           | 12.21 ** | 34.16 ** | 38.70 ** | 20.16 ** |
| ΔR <sup>2</sup>             | 0.08    | 0.21    | 0.03          | 0.12     | 0.14     | 0.09             | 0.10     | 0.21     | 0.23     | 0.10     |

Note: N = 120; \*\*  $p < 0.01$ , \*  $p < 0.05$ ; GHRM: green human resource management.

**Table 5.** Comparison of mediating effects.

|                 | Mechanism   | Effect Amount | 95% CI         |
|-----------------|---|---------------|----------------|
| Total effect    | Transformational leadership → Green creativity                        | 0.31          | (0.169, 0.461) |
| Indirect effect | Transformational leadership → GHRM → Green passion → Green creativity | 0.08          | (0.043, 0.137) |

Note: N = 120; GHRM: green human resource management.

## 5. Discussion and Conclusion

### 5.1. Discussion

When the challenge brought by the environment has become a factor that cannot be ignored, promoting employees' green creativity is critical for firms to build a green competitive advantage by improving employees' ability, motivation, and opportunity to generate new green ideas. This study provides empirical evidence for a positive relationship among transformational leadership, GHRM, employees' green passion and green creativity in China. We also take the perspective of AMO in environmental performance management to study how transformational leadership, GHRM, and employees' green passion influences employees' green creativity, from two aspects of organizational contexts and personal characteristics. To enrich the AMO theory, we further tested the impact of the continuous mediating of GHRM and employees' green passion.

### 5.2. Implications for Theories

The academics contributions of this study are three-fold. First, it provides robust empirical support for the antecedents of employees' creativity concerning environmental protection from the perspective of cross-level interactions between individuals (employees' green passion) and organizational contexts (transformational leadership, GHRM). The exertion of individual creativity is influenced by individual characteristics and organizational contexts [75]. Previous research on the individual determinants of creativity was often considered from two separate perspectives: personal characteristics, or organizational context [25,76,77], and the effect of cross-level interactions between individual and organizational context variables were ignored. Partly motivated by this gap, we explored the interactions impacts among transformational leadership, GHRM (this two are selected as organizational context) and employees' green passion (individual emotion) on employees' green creativity. We found that GHRM and employees' green passion have played a continuously

mediative role in the relationship with transformational leadership and employees' green creativity, which provided further validation that the interactive impact of organizational context and personal features on individual creativity.

Second, our research enriches transformational leadership and AMO theory in the environmental management field. On one hand, the role of transformational leadership in building competitive advantages and enhancing innovation has been extensively examined [37,78]. However, insufficient knowledge had been accumulated regarding the way in which transformational leadership contributes to creativity, as creativity is the first and one of the critical indicators for innovation, not even considering the impact of transformational leadership on green creativity. It has been confirmed that the positive impact of transformational leadership on employees' green creativity in our article. On the other hand, this study extends the research on the influencing factors of green creativity from the perspective of AMO theory. Previous research on employee creativity has focused on products, production processes, etc. Little consideration, however, has been given to environmental factors [1,2]. Therefore, our results enriched the research on the relationship between leadership style and green creativity, and expanded the theoretical perspective of AMO theory in environmental management.

Third, we have further studied the antecedent variables and outcome variables of GHRM, which responded well to the call for integrating strategic human resource management and environmental sustainability [6,79–81]. Environmental issues have become challenges that cannot be ignored for enterprises to achieve sustainable development and gain competitive advantages. Of course, if companies solve them properly, these challenges will change into opportunities [3]. Based on the AMO theory, our results shown the important role of GHRM played in undertaking corporate environmental strategy and stimulating people to achieve corporate strategic goals [32]. As a behavioral perspective of strategy HRM, GHRM reflected the company's green strategy and stimulated employees' green passion, which was beneficial to help the firms to gain green creativity and competitiveness by enhancing employees' ability, motivation, and opportunity to generate new ideas. This contribution is an effective supplement for current GHRM literature which is largely under-theorized, and prior studies tend to simply consider the combination of the existence of green elements and HRM [82,83].

### 5.3. Implications for Practices

Our findings provide managers with a deeper understanding of how to achieve superior green creativity among their employees, especially when firms desire to turn the challenges brought by environmental issues into opportunities. First, it should be realized that investing in environmental issues were not a waste of time, efforts, resources, which increased the burden of a firm. In contrast, it has become an effective approach to gain competitive advantages by enhancing green creativity nowadays, which can help firms to seize new green markets. Therefore, companies should appropriately increase investment in environmental management and strive to establish an environmentally friendly image to attract like-minded job seekers. In order to stimulating employees' green enthusiasm and green creativity, firms are supposed to create an active support environment, such as providing financial support, introducing advanced environmental management techniques, and developing a system that encourages employees' green creativity.

Second, companies would need to align the concept of green into their long-run environmental strategies that it would require a high level system of GHRM practices, including green training and development, green pay, and rewards and so on. The environmental strategy provides a direction for companies to cultivate green competitiveness and creates an environment-friendly atmosphere, which provides the necessary resources and support to generate ideas that are conducive to the sustainable development of the company. So, the HR department should seriously implement GHRM practices. For example, when recruiting new employees, paying more attention to the environmental quality and environmental awareness of employees. Green training should not only focus on enhancing employees' environmental protection skills, but they should also try to pass on the company's environmental management goals and values to the individuals.

Third, this study provides crucial suggestions for managers using transformational leadership to guide GHRM and inspire employees' green passion. Leaders can leverage transformational behaviors in the early stages of GHRM development to establish norms for cooperation, green, and innovation [19], and can commit a certain amount of organizational resources in order to devise eco-friendly passion and creativity for employees [23]. Therefore, transformational leadership can improve firms' green creativity by influencing GHRM and stimulating employees' creativity. This reminds practitioners that in order to enhance green creativity and gain green competitiveness, firms can focus on fostering transformational leadership, and making managers can play a vital role by acting as messengers or representatives in the process of leading the green creativity [84]. Some managerial interventions, such as green team building, brainstorming competitions, or compensation plans for increasing green creativity, might be good choices.

Finally, our research was carried out in the context of China. As we know, China is the second largest economy in the world. Until the early 21st century, enterprises have been excessively pursuing economic benefits and neglecting environmental issues in the process of development. However, with the degradation of environment, the awareness of us relating environmental protection has gradually increased. The Chinese government is also actively promoting the transformation of the development model of enterprises, and urging enterprises to regard economic development, and protection of the ecological environment as equally important which may bring certain challenges to the firms [23]. Through environmental management, mobilizing the environmental passion of employees and enhancing their green creativity; however, it is also possible for companies to turn challenges into opportunities and gain the competitive advantage. To companies that may face the same development scenarios in emerging economies, our research can provide evidence for their companies to transform their economic development models and to achieve green development goals.

#### *5.4. Limitations and Future Directions*

While conducting our study, there were some limitations need to be discussed. Firstly, our data mainly relies on a cross-sectional survey, which means that establishing a causal relation between research variables is hard. We recommend that future studies can use a longitudinal research design to determine how transformational leadership, GHRM, employees' green passion, and green creativity affect each other at different stages of their development in different industries.

Secondly, the data mainly came from the same sample, which meant that a common method bias maybe a potential problem. We used single-factor model fitting to evaluate whether the common method bias had serious effects, and we found that it did not have a serious impact in this study. For future research, we suggest collecting data from different sources of information to reduce the likelihood of common method bias. Our study used employees' perceived transformational leadership to measure the attribute of CEOs' transformational leadership. Although it has been proved by Waldman et al. [71], if the leader or CEO directly addresses the relevant items, the measurement of transformational leadership will be more valid. Thus, we recommend that future research should be based on the perception of the CEO or the leader of a firm when measuring transformational leadership.

Thirdly, this research mainly revealed the impact mechanism of active leadership (transformational leadership) on employees' green creativity, but there are some other leadership perspectives, including responsible leadership form active leadership types or negative leadership such as abusive management, destructive leadership, which are also important for understanding the contextual factors of employee creativity. Therefore, we suggest that future research can further explore other leadership when researching the contextual factors on employees' green creativity from the perspective of leadership.

Finally, our research mainly considered the mechanism of transformational leadership influencing employees' green creativity from the perspective of employee green passion, and ignored other personal characteristics that affect employee creativity, such as employees' green self-efficacy and



green attitude. We suggest that future research can integrate more perspectives to exploring the mechanism of leadership's influence on employee creativity.

### 5.5. Conclusions

This study has indicated that the transformational leadership and GHRM may play important role in promoting green creativity among employees. More importantly, the relationship between these variables was further studied from the perspective of the interaction between individual characteristics and organizational contexts. Therefore, this study can improve our understanding of how firms can enhance green creativity by fully mobilizing factors that influence the creative process. The presented findings may prove to be beneficial to the forerunners of the organizations or the researchers to perform similar studies in other countries to prove whether our findings have a wide adaptability, even outside China. Overall, while environmental protection has become a key concern for global business leaders, and it is imperative for enterprises to gain a better understanding of how to transform their social liabilities to economic benefits. We believe that this paper indeed points out a feasible approach with valuable empirical evidence for firms to follow. More specifically, echoing the new trend of achieving both ecology- and economy-friendly innovation in business practice, this research, which highlights the significance of GHRM and green creativity, can bring new insight into how firms take social responsibility and innovate for not only themselves, but for the whole society.

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