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The Triggering Mechanism of Employee Green Creativity: Individual Factors, Contextual Factors, and Their Joint Effect Pattern

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Abstract

In the context of the "dual carbon" goals, enterprises urgently need to accelerate their green and low-carbon development. Employee green creativity, referring to employees' generation of new ideas that are original, novel, and practical regarding green products, services, processes, and practices, represents a key pathway for enterprises to achieve low-carbon development. However, current academic research still lacks systematic understanding of the antecedents and mechanisms of green creativity. Individual (motivation, cognition, emotion, attitude, ability, behavior) and contextual (leadership, vision strategy, management practices, comprehensive strength) factors constitute the antecedent variables that trigger employee green creativity. Based on this, the co-action patterns of these factors can be summarized into two categories: (1) the "Context → Individual" driven pathway model, for which Self-Determination Theory, Social Cognitive Theory, Affective Events Theory, and Attitude Change Theory serve as explanatory perspectives; (2) the Individual-Context interaction model, for which the Trait Activation Model and Motivated Social Information Processing Theory serve as explanatory perspectives. Future research can enrich the theoretical framework of green creativity from perspectives including concept definition, cultural influence, team building, dynamic attributes, sustainability, and costs.

Full Text

The Predictors of Employee Green Creativity: Individual Factors, Contextual Factors, and Their Interactions

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Abstract

Against the backdrop of China's "dual carbon" goals (carbon peak and carbon neutrality), enterprises urgently need to accelerate their green and low-carbon development. Employee green creativity—the generation of original, novel, and useful ideas concerning green products, services, processes, and practices—represents a critical pathway for achieving this transition. However, current scholarship lacks a systematic understanding of the antecedents and mechanisms that stimulate green creativity.

Individual factors (motivation, cognition, emotion, attitude, ability, and behavior) and contextual factors (leadership, vision and strategy, management practices, and organizational capabilities) constitute the primary antecedents of employee green creativity. Based on these factors, we identify two modes of joint influence: (1) a "context → individual" driving path model, explained through self-determination theory, social cognitive theory, affective events theory, and attitude change theory; and (2) an individual-context interaction model, explained through the competency activation model and motivated information processing theory. Future research should enrich the theoretical framework of green creativity by examining cognitive processes, cultural influences, team-level dynamics, temporal attributes, sustainability, and associated costs.

Keywords: green creativity, individual factors, contextual factors, individual-context interaction, green management

Classification Code: B849; C93

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1. Introduction

Generating novel and useful ideas and actions can facilitate organizational innovation and development. As environmental pollution, ecological degradation, and the greenhouse effect become increasingly severe, the Chinese government has proposed the ambitious "dual carbon" goals—reaching peak carbon emissions by 2030 and achieving carbon neutrality by 2060—encouraging enterprises to protect the ecological environment while pursuing economic interests. Consequently, more companies are actively exploring pathways to green innovation. However, they face several "bottleneck" challenges, including insufficient long-term support for environmental research, shortages of key green technologies, and difficulties in translating environmental research achievements into practice. The key to addressing these issues lies in enhancing the relevant creative capabilities of employees—the primary agents of innovation (Ju & Wen, 2021). Influenced by global climate change and market environmentalism, enterprises must integrate green management philosophy with creativity (Chen & Chang, 2013). Building on this need, organizational behavior scholars have proposed the concept of employee green creativity, defined as employees generating original, novel, and useful ideas regarding green products, services, processes, and

practices (Chen & Chang, 2013). This concept can mobilize broad employee participation in green initiatives and accelerate corporate green development.

As a product combining creativity and sustainable development, employee green creativity not only updates creativity concepts under the "dual carbon" framework and extends creativity research into green management, but also provides a new perspective for environmental sustainability (Li et al., 2020). Moreover, it aligns with practical needs: according to the "2022 Annual Report on China's Policies and Actions to Address Climate Change" released by the Ministry of Ecology and Environment, by 2021 China had developed 989 types of green design products, 662 green factories, 107 green supply chain enterprises, and 52 green industrial parks, cultivating 430 energy-saving enterprises with output value exceeding 8 trillion yuan and an annual growth rate of over 10%. As environmental issues become increasingly urgent and important, enterprises urgently need to transform environmental crises into historical opportunities, and cultivating employee green creativity can accelerate this green innovation process (Chen & Chang, 2013).

Scholars both domestically and internationally have conducted extensive research on stimulating employee green creativity, providing important insights for green management practice. However, these studies are loosely connected and relatively fragmented, leaving unresolved issues such as unclear identification of green creativity antecedents and ambiguous mechanisms of individual and contextual factors. This fragmentation hinders a comprehensive understanding of the current state and trends in green creativity research and prevents the development of an integrated answer to how employee green creativity can be stimulated. To address these gaps, this study employs the literature search methodology recommended by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Moher et al., 2010) to identify, screen, assess eligibility, and include existing literature (Yang & Liu, 2021). In the identification phase, we searched Chinese databases (CNKI, Wanfang, VIP) and English databases (Web of Science, EBSCO, ProQuest) using keywords "environmental/green creativity" or "Green/Environmental Creativity," setting the start year to 2013 (when green creativity was first formally proposed and a measurement tool was developed and widely adopted; Chen & Chang, 2013). We excluded conference papers and dissertations that might lack peer review and theoretical grounding (Gardner et al., 2011), yielding 3,941 initial documents (3,580 English, 361 Chinese). In the screening and eligibility phases, we removed duplicates, irrelevant fields, studies unrelated to the green creativity construct (e.g., green performance), non-mainstream journals, and non-English/Chinese literature by reviewing titles, abstracts, and keywords. The final inclusion phase retained 42 eligible studies, comprising 38 English studies (all empirical, 0 theoretical reviews) and 4 Chinese studies (all empirical, 0 theoretical reviews).

Based on this literature review, we examine the conceptual definitions and measurement tools of green creativity and distinguish similar concepts. We primarily synthesize the factors influencing green creativity from individual factors,

contextual factors, and individual-context interaction patterns to analyze the specific question of "how to stimulate employee green creativity," aiming to help scholars further understand the essence and core elements of green creativity.

2.1 The Uniqueness of Green Creativity in Traditional Creativity Research

The concept of green creativity emerged from scholarly attention to ecological protection and green innovation. Inheriting the characteristics of creativity, green creativity emphasizes individuals generating new ideas for green products, services, processes, and practices (Siddiquei et al., 2021). However, green creativity is not merely a specific manifestation of creativity but a form of creativity that focuses on stakeholders' environmental demands, prioritizes environmental benefits, and emphasizes stakeholders' environmental goals (Chen & Chang, 2013). It shares commonalities with traditional creativity research while possessing unique features.

The common ground between green creativity and traditional creativity lies in their shared focus on the originality, novelty, and usefulness of ideas, developing unique competitive advantages and creating corresponding benefits to enhance organizational performance and ensure survival (Mittal & Dhar, 2016).

Green creativity differs from traditional creativity in four key aspects. First, **manifestation differs**. Traditional creativity emphasizes economic benefits as the core (Amabile et al., 1994), encompassing both benevolent expressions such as improving products, services, technologies, and workflows, and malicious expressions like workplace deviance and unethical behavior (Gino & Ariely, 2012). In contrast, green creativity centers on environmental benefits, making significant contributions to obtaining green competitive advantages, enhancing corporate image, and achieving green and clean production (Li et al., 2020; Maitlo et al., 2022). It serves the dual interests of enterprises and society constructively and represents a benevolent expression. This is because the "green" philosophy contradicts the malicious use of creativity; the "green" concept urges employees to act with environmental protection as a prerequisite, and their actions are often motivated by "good intentions."

Second, **dominant goals differ**. Traditional creativity aims to improve organizational performance, create competitive advantages, ensure long-term survival, and maximize organizational benefits. However, the natural environment has suffered immense pressure and devastating damage due to rapid economic development across industries, making environmental protection an urgent crisis within the business logic dominated by traditional creativity (Mittal & Dhar, 2016). Green creativity aims to help organizations adapt to increasingly complex economic environments, meet customers' unique and additional environmental expectations (Mittal & Dhar, 2016), acquire new competitive advantages, and achieve sustainable development goals (Song & Yu, 2018), thereby compensating

for traditional creativity's neglect of environmental issues.

Third, **inducing conditions differ**. Although both traditional and green creativity influences can be categorized into individual, team, and organizational levels (Anderson et al., 2014; Chen & Chang, 2013), their emphases differ. Traditional creativity primarily utilizes individual traits or task and environmental characteristics to cultivate mental agility and cognitive flexibility, enabling the creation of valuable new products, services, and processes within complex social systems (Woodman et al., 1993). Green creativity, however, focuses on environmentalist market trends, with inducing factors emphasizing contemporary personal environmental values and corporate green strategic concepts. In other words, green creativity provides new ideas and momentum for achieving sustainable development and solving environmental management problems from a strategic height (Song & Yu, 2018). Therefore, their inducing conditions are not entirely consistent (Chen et al., 2015). Additionally, interactionism suggests that green creativity's formation mechanism is more complex than traditional creativity's, requiring the interaction of various individual and environmental antecedents to emerge (Kalyar et al., 2021; Shalley et al., 2004).

Fourth, **requirements for personal qualities differ**. Traditional creativity only demands mental agility from employees, whereas green creativity, as a higher-level environmental action, requires employees to not only possess basic personal traits for creative activities (such as diligence, inclusiveness, and innovation) but also higher-level qualities like environmental mission, environmental responsibility awareness, and environmental sensitivity (Li et al., 2020).

2.2 Conceptual Perspectives and Measurement Tools for Green Creativity

Currently, scholars primarily adopt two perspectives to define green creativity: the goal-outcome perspective and the comprehensive competency perspective.

Representative scholars of the **goal-outcome perspective**, Chen and Chang, define green creativity as "employees generating original, novel, and useful ideas regarding green products, services, processes, and practices" (Chen & Chang, 2013). Unlike traditional creativity, green creativity emphasizes the environmental friendliness and ecological sustainability of innovative outcomes in products, services, processes, and practices. Most studies follow this perspective (Farooq et al., 2021; Joshi & Dhar, 2020; Kalyar et al., 2021; Maitlo et al., 2022; Song & Yu, 2018; Yang et al., 2019). Guided by this concept, Chen and Chang (2013) adapted the creativity scales developed by Rego et al. (2007) and Barczak et al. (2010) into a 6-item green creativity scale by substituting keywords and focusing on thematic words—replacing "my subordinates" with "members of green product development projects" and adding "green/environmental" terminology. Using a 5-point Likert scale, green product development project leaders rated their members' green creativity (other-rated). A sample item: "Members

of green product development projects can propose new methods to achieve environmental goals" ($\alpha = 0.913$). This scale has been widely used by scholars worldwide and validated across different organizational cultures, including China's manufacturing (Tian & Tian, 2020) and automotive industries (Maitlo et al., 2022), electronics technology (Li et al., 2020), business graduates (Song & Yu, 2018), Vietnam's tourism industry (Luu, 2019), India's handicraft industry (Joshi & Dhar, 2020), and the hotel industries of Europe, Kenya, Pakistan, Istanbul, and Morocco (Bhutto et al., 2021; Farooq et al., 2021; Kalyar et al., 2021; Muisyo et al., 2022; Öğretmenoğlu et al., 2022). However, scholars have shown inconsistency in item selection. For example, some simplified the subject from green product development project members to company members/organizational members/project members (Chen et al., 2015; Mittal & Dhar, 2016; Riva et al., 2021). Li et al. (2020) modified the subject to first-person for employee self-assessment of green creativity. Muisyo et al. (2022) used the scale to measure green creativity at both employee and team levels. Bahzar (2019) and Bhutto et al. (2021) used only 4 and 5 items respectively, without explaining the rationale for partial item selection.

Representative scholars of the **comprehensive competency perspective**, Jiang et al., argue that green creativity refers to employees' comprehensive ability to generate novel and useful ideas to create green outcomes. Jiang et al. (2020) noted that although Chen and Chang's (2013) definition has gained widespread acceptance, it only reflects the product outcome dimension and lacks comprehensive measurement criteria, making it difficult to fully capture the essence of green creativity. Specifically, green creativity is an integrated capability encompassing green creative motivation, thinking, behavior, and outcomes, requiring multi-dimensional evaluation. Consequently, Jiang et al. (2020) developed a new employee green creativity scale based on Rhodes' (1961) 4P model of creativity, using a 7-point Likert scale ($\alpha = 0.880$). The scale includes four dimensions with 4 items each: Green Creative Thinking, Green Creative Behavior, Green Creative Motivation, and Green Creative Outcome, corresponding to the 4P model's Person, Process, Press, and Product. Green Creative Thinking represents cognitive ability to develop green product outcomes (sample item: "I can think flexibly about green-related creative problems"). Green Creative Behavior emphasizes activity capacity for environmental tasks (sample item: "I can share green-related creative knowledge and skills with others"). Green Creative Motivation focuses on the drive to propose original and feasible ideas (sample item: "Engaging in green-related creative work gives me a sense of accomplishment"). Green Creative Outcome concerns the ability to achieve creative goals (sample item: "I can quickly comprehend novel and useful green-related concepts"). These scales and sample items are shown in Table 1 .

This paper argues that the conceptual definition of green creativity should continue using the goal-outcome perspective rather than the comprehensive competency perspective, measuring employees' generation of environmentally friendly and ecologically sustainable green creative ideas from the outcome dimension. For employees without green product development experience who have not ac-

tually participated in green creative tasks, even if they possess the ability to create green outcomes, this does not guarantee their contribution to the green innovation process. Moreover, the competency perspective relies on individuals' subjective feelings, making it difficult to objectively and reasonably assess employees' green creativity levels.

2.3 Distinguishing Similar Concepts

It is also necessary to differentiate "green creativity" from the similar concept of "green innovation." Green innovation refers to hardware or software innovations related to green products or processes, involving energy conservation and pollution prevention, waste recycling, green product design, or environmental technology innovation, aiming to use green knowledge to eliminate resource bottlenecks and promote sustainable development (Chen et al., 2006)—that is, it focuses on idea implementation. Green creativity, in contrast, represents the theoretical system and practical knowledge individuals/organizations use to propose green creative ideas (Song & Yu, 2018)—emphasizing idea generation. Therefore, green creativity forms the foundation for green innovation and facilitates the green innovation process. However, some scholars have equated or mixed scales when measuring these concepts; for example, Zhu et al. (2013) used a creativity scale to measure subordinates' innovativeness. Scholars emphasize that innovation and creativity should be clearly distinguished, and the costs of conceptual confusion should not be ignored (Anderson et al., 2014; Hughes et al., 2018).

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3. The Stimulating Mechanisms of Employee Green Creativity: Individual and Contextual Factors

Previous research has made beneficial progress on the stimulating mechanisms of employee green creativity. Considering the similarity among variables, this study categorizes and organizes related concepts, finding that individual and contextual factors constitute two core categories influencing employee green creativity, and their joint interaction patterns form important mechanisms for stimulating green creativity. Therefore, we extract the research framework shown in Figure 1 [Figure 1: see original paper] to clarify the current state of green creativity research.

[**Employee Green Creativity**] - Goal-outcome perspective - Comprehensive competency perspective

Motivated Social Information Processing

"Context → Individual" Driving Path Model - Self-determination theory - Social cognitive theory - Affective events theory - Attitude change theory

Contextual Factors: - Green transformational leadership - Green inclusive leadership - Ethical leadership - Environmentally-specific servant leadership - Environmentally-specific authentic leadership - Environmentally-specific empowering leadership - Green shared vision - Green innovation strategy - Green entrepreneurial orientation - Green human resource management practices - Environmental innovation practices - Green innovation - Corporate social responsibility - Green dynamic capabilities - Resource commitment - Green innovation climate

Individual Factors: - Green intrinsic motivation - Green extrinsic motivation - Green autonomous motivation - Prosocial motivation - Green mindfulness - Self-efficacy - Value congruence - Environmental values - Green passion - Green work engagement - Green creative process engagement - Green organizational identity - Green knowledge - Workplace status - Green citizenship behavior - Pro-environmental behavior - Green knowledge sharing behavior

Figure 1. Research Framework of Individual-Contextual Factors Influencing Employee Green Creativity

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3.1 Individual Factors

3.1.1 Employee Motivation Motivation is the driving force that initiates, directs, sustains, and regulates specific behavioral responses (Amabile et al., 1994). Previous research indicates that when individuals possess green intrinsic motivation, green autonomy, or prosocial motivation, their green creativity reaches high levels, whereas green extrinsic motivation hinders green creativity (Li et al., 2020; Maitlo et al., 2022). For example, Li et al. (2020) found that green intrinsic motivation stimulates employees' environmental interests and induces inspiration and ideas for solving environmental problems (Amabile et al., 1994; Hughes et al., 2018). In contrast, green extrinsic motivation—an external green driving force derived from reputation, money, and status (Hughes et al., 2018)—reduces employees' enthusiasm for autonomous environmental thinking and negatively moderates the relationship between green intrinsic motivation and green creativity. As Liu and Liu (2023) noted, high spiritual incentives combined with low material incentives may represent the optimal incentive mix for enhancing employee green creativity. However, such research samples from China's IT and hotel tourism industries, characterized by high power distance and collectivist culture, may lack universal applicability and require further investigation. Research also shows that in a green innovation atmosphere that supports autonomy, employees with high green autonomy can experience greater freedom and actively think about creative environmental solutions (Ekvall, 1996)—that is, green autonomy strengthens the promoting effect of green innovation climate on green creativity (Maitlo et al., 2022). Additionally, prosocial motivation, as an effective approach to achieving organizational environmental goals and cultivating employee green creativity (Yang

et al., 2019), can encourage internal members to coordinate and exhibit altruistic behavioral tendencies (Grant, 2007). However, these studies have explored the singular effects of different motivations without distinguishing motivation types in detail. Future research could investigate the effects of other motivation types, such as external motivation, informational motivation, and controlled motivation (Li et al., 2020), on employee green creativity.

3.1.2 Employee Cognition Cognition is an important factor influencing employee green creativity. Across existing literature, cognitive factors mainly include green mindfulness, self-efficacy, value congruence, and environmental values. Green mindfulness refers to individuals' conscious awareness of relevant environmental information; employees with green mindfulness focus on green creative tasks and creatively propose new ideas for solving environmental problems (Chen et al., 2015). Green self-efficacy refers to individuals' belief in their ability to organize and implement environmental solutions (Chen et al., 2015), which helps improve their green creativity levels for achieving environmental goals (Jiang et al., 2020). Chen et al. (2015) and Farooq et al. (2021) validated the positive effects of green mindfulness and green self-efficacy on employee green creativity using Taiwanese and Moroccan samples, respectively. Notably, another aspect of self-efficacy—creative self-efficacy—is equally important for stimulating green creativity. Tian and Tian (2020) noted that unlike green self-efficacy, which emphasizes environmental potential, creative self-efficacy focuses more on confidence and creative potential when facing challenges, helping to stimulate employees' creative engagement in green tasks. Their study also found that value congruence between followers and leaders stimulates employee green creativity: the greater the alignment between employee and leader/organizational values, the more employees internalize green goals as part of their own values (Peng & Wang, 2019), and the more easily green creativity is stimulated (Tian & Tian, 2020). Additionally, Al-Hawari et al. (2021) found that employees' environmental values direct their attention toward environmentally friendly activities, prompting them to generate new environmental protection solutions (Steg, 2016).

3.1.3 Employee Emotion Existing research based on different national samples has confirmed that individuals' harmonious environmental passion helps stimulate their green creativity (Chen et al., 2021; Luu, 2023). Green passion, as a positive emotion that awakens employees' environmental mission, can increase their activity and pleasure in the work environment, enhance their willingness to participate in green creative activities (Kollmuss & Agyeman, 2002), and encourage them to invest in green creative tasks with greater vitality, motivation, and inspiration.

3.1.4 Employee Attitude Employees' environmental attitudes, such as green work engagement, green creative process engagement, and green organizational identity, play a significant role in generating green creativity. Bhutto

et al. (2021) studied 302 European hotel employees and found that employees with high green work engagement devote themselves wholeheartedly to green causes, are more willing to focus on environmental issues, and explore and propose novel and useful green ideas to reduce ecological damage (Bakker et al., 2020). These results were confirmed by Karatepe et al. (2022). Other research has examined green creative process engagement conducted iteratively, finding that employees need to experience three stages—investment strategy formulation, innovative idea conception and refinement, and information integration (Horng et al., 2016; Reiter-Palmon & Illies, 2004)—to continuously and proactively participate in innovation activities and consistently generate creative environmental ideas (Kalyar et al., 2021; Sidney et al., 2022). Green organizational identity—employees' perception and sense of belonging in collectively constructing organizational environmental solutions—echoes the organization's environmental purpose (Xing et al., 2019) and better stimulates employees' novel and useful environmental ideas (Al-Ghazali et al., 2022; Mittal & Dhar, 2016; Song & Yu, 2018).

3.1.5 Employee Resources and Abilities The process of shaping employee green creativity also requires employee resources and abilities. Riva et al. (2021) noted that green knowledge provides employees with the knowledge and skills to creatively solve environmental problems, effectively addresses stakeholders' environmental expectations, and helps enterprises gain competitive advantages (green creativity) and high organizational performance (Cheng, 2019). Conversely, if employees lack relevant green knowledge reserves, they cannot propose effective environmental ideas (Cheng, 2019), and their green creativity levels will not significantly improve (Riva et al., 2021). Meanwhile, Liao and Chen (2018) also pointed out that employees may need both green knowledge and motivational willingness as prerequisites to drive green creativity. Although research has verified the importance of knowledge for creative thinking, a paradox exists where employees lacking relevant knowledge can still be creative (Cheng, 2019). Therefore, it is necessary to examine potential moderating effects. Additionally, workplace status represents employees' external resources such as ability and reputation within the organization (Zinko et al., 2012), which can mobilize internal resources and create an internal ecological environment conducive to green innovation. Employees with high workplace status have a strong sense of responsibility (Anderson et al., 2015), urge themselves to continuously improve green creative thinking, and consequently enhance their green creativity levels (Yang et al., 2019).

3.1.6 Employee Behavior Employee behavior is closely related to green creativity. Green creativity is regarded as a creative environmental outcome, while employee behavior represents the important action pathway to achieve this outcome. In other words, employee environmental behavior provides the possibility for developing proactive environmental habits and forming environmental achievements. For example, pro-environmental behavior encourages em-

ployees to actively try behaviors that reduce environmental harm (Kollmuss & Agyeman, 2002), thereby proposing unique environmental ideas and solutions. Simultaneously, pro-environmental behavior encourages them to break away from fixed thinking patterns and behavioral approaches to find solutions to environmental problems and propose more beneficial ideas for environmental processes (Ahmad et al., 2022). Similarly, Öğretmenoğlu et al. (2022) collected data from Istanbul hotel employees and noted that employees with green organizational citizenship behavior hold an open attitude toward environmental work, demonstrating more green creativity in daily work, such as exploring and proposing novel methods to reduce environmental damage. Badar et al. (2023) analyzed data from 265 Pakistani hotel employees and found that employees' green knowledge sharing behavior creates an environment and culture suitable for cultivating and stimulating green creativity: in active green communication processes, employees can both transmit environmental values and green knowledge and obtain new green ideas and supportive returns from others, forming a virtuous cycle between recipients and providers (Watson & Hewett, 2006) that often stimulates improvements in employee green creativity levels (Liao & Chen, 2018).

3.2 Contextual Factors

3.2.1 Leadership Styles Leadership styles are crucial in shaping employee green creativity. Under the trend of green management research, different types of environmental leadership styles have gradually attracted scholars' attention, such as green transformational leadership, green inclusive leadership, ethical leadership, environmentally-specific servant leadership, environmentally-specific authentic leadership, and environmentally-specific empowering leadership. Green transformational leadership, derived from transformational leadership, activates employees' creative potential through four dimensions: green intellectual stimulation, green individualized consideration, green charismatic leadership, and green inspirational motivation (Li et al., 2020; Tian & Tian, 2020; Al-Ghazali et al., 2022; Bahzar, 2019; Chen & Chang, 2013; Mittal & Dhar, 2016; Maitlo et al., 2022). Bhutto et al. (2021) proposed "green inclusive leadership" based on previous research—a relational leadership style that is open, approachable, and interacts with employees to achieve environmental goals. Such leaders hold inclusive attitudes toward green concepts, encourage subordinates to think from environmental perspectives, maintain clear cognition and positive solutions toward environmental threats or challenges, and guide subordinates to propose and implement innovative ideas (Bhutto et al., 2021). Additionally, research has begun examining other leadership impacts on green creativity. For instance, Bahzar (2019) argued that ethical leadership attempts to change employees' moral performance through ethical norms, maximizing green creativity levels in ecological protection practice. Luu (2019) found that environmentally-specific servant leadership provides services for cultivating

employees' environmental values and knowledge skills, offering comprehensive support for employees to propose green creative ideas. Luu (2023) empirically demonstrated that environmentally-specific authentic leadership can effectively safeguard the positive impact of green human resource management on green creativity. Badar et al. (2023) used conservation of resources and social exchange theories to prove that environmentally-specific empowering leadership enhances employee green creativity by stimulating green knowledge sharing behavior.

3.2.2 Corporate Vision and Strategy As environmental situations become increasingly urgent, management attempts to build green shared vision and green innovation strategy from a corporate height to stimulate employees' green creativity in response to environmental challenges. Research has found that green shared vision provides clear environmental goals and strategic directions (Chen et al., 2015), correctly guiding employees' actions and helping members construct novel and useful environmental ideas and skills from problem identification, information search, and problem-solving perspectives (Reiter-Palmon & Illies, 2004). Therefore, organizational-level green shared vision helps stimulate employee-level green creativity. Song and Yu (2018) surveyed business school graduates in Guangdong Province and found that environmental regulations promote the formation of corporate green innovation strategy, encourage effective resource utilization to reduce costs, meet customers' environmental responsibility requirements, and stimulate employees' conscious or unconscious green innovation awareness (Chang & Chen, 2013)—that is, green innovation strategy positively correlates with employee green creativity. Additionally, green entrepreneurial orientation is an important strategic tendency for organizations to control green ecological development and guide practice, helping to stimulate employee green creativity (Luu, 2022). Its sub-dimension—green proactiveness orientation—has similar effects (Zhang & Li, 2021).

3.2.3 Corporate Green Management Practices Enhancing employee green creativity cannot be separated from effective corporate green management implementation. Previous studies have found that enterprises implementing a series of green human resource management practices in environmental management—such as recruiting environmentally conscious employees, providing green training, and establishing green performance reward and punishment systems—can encourage employees to actively participate in green practices, shape correct green values, and thereby enhance green innovation awareness, specifically manifested as improved green creativity levels (Chen et al., 2021; Farooq et al., 2021; Hameed et al., 2022; Luu, 2023; Muisyo et al., 2022; Sidney et al., 2022). Song et al. (2020) surveyed multiple Chinese industries and noted that under the guidance of corporate green innovation strategy, environmental innovation practices cultivate employees' green creative concepts and improve green creativity levels by improving process technology to enhance resource utilization and achieve environmental goals (Li, 2014).

Given that organizational management practices responding to current environ-

mental issues may differ between proactive and reactive approaches, green innovation is divided into two types: proactive green innovation and reactive green innovation. The former refers to "organizations actively taking environmental-related innovative initiatives to lead competitors, reduce costs, guide markets, and obtain competitive advantages," which helps activate employee green creativity and grants them green innovation autonomy. The latter refers to "organizations reacting to changing environments or taking environmental-related passive innovations to cope with challenges in order to comply with environmental regulations and adapt to stakeholder requirements" (J. Wang et al., 2023). Reactive green innovation only takes action when environmental problems arise, making it difficult for employees to cope with constantly changing environments (Henriques & Sadorsky, 1999), primarily resulting in low green creativity levels or no significant association between this type of green innovation and employee green creativity.

Additionally, employees' perception of corporate social responsibility is an important factor from organizational practice that stimulates their green creativity. Corporate social responsibility aims to improve stakeholder welfare (Turker, 2009), provides value judgment standards for organization-environment relationships, and signals employees to protect the environment. As important organizational stakeholders, employees judge whether corporate behavior meets environmental expectations. When employees believe the organization actively shoulders socio-ecological responsibility, their green cognition and skills are effectively improved (Hur et al., 2018). Similarly, Kalyar et al. (2021) argued that employees' positive judgment of corporate social responsibility strengthens their understanding of green concepts, focuses them on green creative tasks, and leads to more green creative ideas (Luu, 2020).

3.2.4 Corporate Comprehensive Strength An organization's comprehensive strength in environmental protection is the cornerstone for ensuring employee green creativity. Green dynamic capabilities, as a capacity to cope with environmental changes, emphasize adaptability and dynamism. Employees with green dynamic capabilities can use existing organizational resources to update environmental cognition, break conventions, and try different approaches to respond to dynamic environments, thereby generating green innovation thinking (Chen & Chang, 2013; Joshi & Dhar, 2020). Maitlo et al. (2022), using data from 20 automotive companies in Liaoning Province, pointed out that the green innovation climate created within enterprises encourages employees to voluntarily participate in creative environmental tasks, providing a foundation of mutual trust, shared risk-taking, and task implementation for organizational members (Ekvall, 1996), and encouraging employees to propose more novel and useful environmental ideas (Amabile et al., 1996). Recent research has repeatedly confirmed the positive relationship between green innovation climate and green creativity (Bhutto et al., 2021; Chen et al., 2021; Maitlo et al., 2022). Additionally, research indicates that organizational resource commitment is an important antecedent affecting employee green creativity. In other words, if or-

ganizations cannot guarantee adequate resource supply and allocation, green creativity levels cannot be substantially improved even when positive antecedents like green dynamic capabilities and green organizational identity are present (Joshi & Dhar, 2020; Mittal & Dhar, 2016).

3.3 Joint Influence Patterns of Individual and Contextual Factors

This study argues that individual and contextual factors exhibit two joint influence patterns in affecting employee green creativity: the driving path model and the interaction model. The former focuses on how organizational or social environments shape employee green creativity—that is, contextual factors continuously stimulate employees to form internal environmental motivation, influence self-environmental cognition, generate corresponding emotional responses, change previous attitudes and behaviors, and consequently produce positive or negative effects on green creativity. The latter focuses on the interactive effects between individual and contextual factors, exploring the complex formation process of employee green creativity based on individual-context interactions.

3.3.1 "Context → Individual" Driving Path Model Across existing literature, contextual elements constitute important antecedents of employee green creativity. Explanations for different contextual response effects rely on specific theories. By reviewing theories used in current research, this study explains how contextual factors influence individual factors to stimulate employee green creativity based on self-determination theory, social cognitive theory, affective events theory, and attitude change theory.

Self-determination theory is an important theoretical perspective for explaining green creativity formation, with motivational factors occupying a central position. When organizational contexts satisfy individuals' needs for autonomy, competence, and relatedness, individuals develop intrinsic motivation and focus on proactive tasks matching their intrinsic motivation (Deci & Ryan, 2000)—that is, improving individual innovation performance. As environmental issues are placed on work agendas, employees' latent love, passion, or interest for environmental causes gradually internalizes into environmental motivation, thereby improving green creativity levels. Conversely, if organizations forcibly require environmental task completion or provide external benefits like rewards, reputation, and status, they induce extrinsic motivation that may be counterproductive (Hughes et al., 2018). For example, Li et al. (2020) surveyed 298 IT enterprise employees and found that inspired by green transformational leadership, employees develop intrinsic motivation that enhances their green creativity. In contrast, employees driven by external motivations such as rewards, deadlines, or negative feedback reduce their interest and enthusiasm for autonomous environmental thinking (Hughes et al., 2018), feel pressured by green tasks, and exhibit low green creativity.

Social cognitive theory posits that individuals' behavioral responses originate from contextual factors' influence on individual cognition (Bandura, 2001). Specifically, individuals actively adjust their cognition under environmental stimuli, developing beliefs and judgments about their abilities through conscious explicit controlled processing and unconscious implicit automatic processing, forming self-cognition matching the context, and subsequently adjusting individual behavior (Bandura, 2001). Organizational work contexts that actively respond to "dual carbon" goals guide employees to form green innovation concepts and stimulate green cognition. On one hand, social cognitive theory identifies self-efficacy as a key link connecting organizational context and individual behavior; for example, green HRM practices develop employees' green self-efficacy through communication and training (Farooq et al., 2021), and this belief motivates employees to actively participate and propose innovative solutions (Jiang et al., 2020). On the other hand, individuals' observational learning processes are also reflected in this theory; for example, green-related leadership, as a key environmental factor stimulating and guiding employees' green cognition formation, prompts employees to receive more environmental information while observing leader behavior, consciously forming context-matching green cognition and activating their green creative potential (Bhutto et al., 2021; Chen & Chang, 2013; Luu, 2019).

Affective events theory connects events, emotions, attitudes, and affective reactions into a complete reaction chain, arguing that affective reactions originate from affective events, mediate through emotions, and form corresponding attitudes and behaviors. Individuals evaluate events to obtain (positive or negative) emotional valence, which affects emotional activation intensity (strong or weak), and this dynamic emotional reaction result varies among individuals (Weiss & Cropanzano, 1996). In the "dual carbon" context, organizational attention to green issues as an affective event can stimulate employees' psychological environmental awareness and behavioral environmental actions. For example, green HRM practices constitute affective events that trigger employees' emotional reactions, generating green passion that awakens employees' environmental mission; this positive emotion enhances employees' willingness to participate in green creative activities (Kollmuss & Agyeman, 2002) and encourages them to proactively propose green creative ideas (Chen et al., 2021; Luu, 2023).

Hovland et al. (1953) proposed the **Yale attitude change approach**, arguing that individuals' active acceptance of certain information leads to changes in previous attitudes and behaviors, establishing a persuasion process model composed of four elements: persuader, persuasive message, persuasion situation (external stimulus), and persuadee (internal factor). This process can be explained by two cognitive processing systems: the dual-system model (including intuitive heuristic system and rational analytical system) and the elaboration likelihood model (including peripheral route and central route) (Kahneman, 2003). Environmental contexts influencing individuals' creative ideas for environmental goals can be explained by these models. For example, green transformational leadership (persuader) can provide employees (persuadees) with an atmosphere

(persuasive message and situation) that activates green creative potential: green transformational leadership increases employees' green involvement from four dimensions—green intellectual stimulation, green individualized consideration, green charismatic leadership, and green inspirational motivation—such as formulating environmentally friendly policies and using raw materials more effectively (Sidney et al., 2022), thereby triggering employees' analytical system or central route processing and prompting them to continuously propose creative environmental ideas (Sidney et al., 2022).

Therefore, these theories effectively capture the contextual stimulating mechanisms of employee green creativity. Self-determination theory clarifies how environmental factors influence individuals' intrinsic motivation for environmental activities, social cognitive theory explains the cognitive drivers of green creativity formation, affective events theory depicts the complete emotional reaction chain of event-emotion-attitude, and attitude change theory reveals the persuasion process of individuals' active information acceptance. Future research could empirically compare the explanatory power of different theories to reveal their relative weights in green creativity influencing factor research. Additionally, other theoretical perspectives that can explain green creativity stimulation under the "context → individual" driving path model should be explored, such as situational strength theory. Situational strength refers to cues provided by the external environment about whether potential behaviors are desirable (Meyer et al., 2010). High situational strength conveys clear behavioral expectation signals to individuals (Newman et al., 2017), effectively coordinates individual perceptions, reduces situational ambiguity, and consequently produces positive effects and appropriate behaviors (Meyer et al., 2010). If organizations lack an atmosphere encouraging environmental protection, employees may feel uncertain about environmental goals and green production obligations (Su & Hahn, 2022), hindering their active exploration of green activities. Future research could use this theory to expand green creativity research and strengthen understanding of how different contexts (e.g., ethical climate) and their strength influence employee green creativity outcomes. Furthermore, new driving paths between underexplored contextual and individual factors could be investigated, such as green leadership and workplace status. H. Wang et al. (2023) argued that empowering leadership delegates and shares some decision-making power with team members, making members feel respected, prominent, and prestigious—that is, perceiving high workplace status—and consequently exhibiting pro-organizational behavior. Future research should examine whether corresponding green leadership can also enhance employees' workplace status perception by improving relationships with organizational members, thereby producing similar green driving effects; which type of green leadership has the optimal driving strength; and whether substitution or enhancement effects exist.

3.3.2 Interaction Model Woodman et al. (1993) proposed an individual-context interaction model of creativity, arguing that individual-level creativity is a complex product formed by the interaction between personal traits (e.g.,

cognition, motivation, relevant skills) and work environments (e.g., leadership, organizational climate), which has been empirically tested multiple times (Shalley et al., 2009). As a special form of creativity in the green management field (Chen & Chang, 2013), employee green creativity formation relates to both individual cognitive characteristics (e.g., green mindfulness, green organizational identity, environmental values) and non-cognitive characteristics (e.g., green work engagement), while also being influenced by current work contexts—that is, green creativity is stimulated under individual-context interactions. Current research lacks detailed differentiation of individual-context interaction patterns. This study introduces the competency activation model and motivated information processing theory to provide a foundational explanatory framework for this interaction pattern in stimulating employee green creativity.

The **competency activation model**, derived from the extended trait activation theory (Tett et al., 2013) and the competency iceberg model (McClelland, 1973), addresses the moderating effect of contextual factors on individual factors and deeply explores "competency activation" forms (Liu et al., 2020). This model argues that only appropriate work context cues can activate individuals' work-related competencies, thereby manifesting explicit outcomes (Liu et al., 2020). Notably, the activation targets of contexts are not limited to single trait elements but encompass a complete competency system including both exposed surface-level competencies (knowledge, skills, abilities, collectively KSA) and hidden deep-level competencies (values, self-concept, traits, motivation, etc.), enabling individuals to act in ways consistent with their competency attributes. The activation process of context cues on surface-level competencies is similar to the activation process of KSA in the extended trait activation theory, where individuals exhibit corresponding behaviors but cannot generate intrinsic satisfaction. The activation process of deep-level competencies is equivalent to the activation process in trait activation theory, where intrinsic satisfaction and external incentives from work performance are important factors inducing individual work behavior, which in turn affects the work context and deepens or weakens the activation process intensity (Liu et al., 2020; Tett & Burnett, 2003). Employees' relevant environmental competencies, stimulated by matching environmental context cues, help form pro-environmental tendencies and prompt them to propose green innovative ideas. Simultaneously, intrinsic satisfaction obtained during deep-level competency activation and external incentives from green performance can enhance activation intensity and further improve employee green creativity levels. Conversely, if work contexts cannot provide backup foundations ensuring green development, even employees with environmental competencies may worry that their behavior will be viewed as "nonconforming" (Luu, 2020), making it difficult to stimulate green creativity.

Specifically, Mittal and Dhar (2016) and Joshi and Dhar (2020) both proposed that when organizations can provide sufficient resources for green innovation—that is, high resource commitment levels—individual competencies such as green dynamic capabilities and green organizational identity will be activated, helping to stimulate employees to generate more novel and useful environmental

ideas. Organizations with low resource commitment lack backup support, leaving employees unable to act despite their willingness, and their green creativity levels cannot be substantially improved. Additionally, employees' perceived corporate social responsibility provides context cues that activate green mindfulness (Kalyar et al., 2021). Compared with organizations having low corporate social responsibility, organizations that actively assume social responsibility establish good external images that motivate employees to fully leverage the positive effects of green mindfulness (Luu, 2020). Furthermore, the activation effect of "dormant" internal environmental values on green creativity also depends on green HRM context cues (Al-Hawari et al., 2021). These cues convey organizational-level environmental purposes to employees and construct work meaning; when employees' values align with these cues, employees actively think about environmental management solutions and propose more creative ideas.

Motivated information processing theory emphasizes the importance of motivation, arguing that social motivation and cognitive motivation jointly determine the information processing process in stimulating employee creativity (Bechtoldt et al., 2010; De Dreu et al., 2011). Social motivation determines which information to process and indicates the direction of the processing, while cognitive motivation determines how to process and integrate information, expanding processing depth (De Dreu et al., 2011). This theory suggests that specific contexts shape information processing through individual factors via these two motivations (Wang et al., 2019; Grant & Berry, 2011), influencing the quality of information search or viewpoint sharing. This theory provides insights for truly achieving green and low-carbon development: management should rely not only on contextual factors such as formulating green management practices and implementing green leadership but, more importantly, on individual factors that shape social and cognitive environmental motivations. When context factors encouraging green innovation align with these motivations, they further enhance employees' engagement with organizational contexts, making employees more concerned about environmental benefits, actively processing relevant green contextual information, and spontaneously proposing novel and effective green management solutions. If individual factors capable of shaping social and cognitive motivations are lacking, green-oriented contexts cannot or can only forcibly require employees to participate in relevant environmental activities. Employees lacking motivation to contribute to creative activities and unwilling to take risks may hinder improvements in green creativity levels.

For example, Maitlo et al. (2022) found that for employees with high green autonomy, green innovation climate more easily exerts motivational effects. Because green autonomy shapes employees' cognitive and social motivations, prompting such employees to freely choose, decide, and practice green innovation solutions; for these employees, green innovation climate more easily motivates them to actively process information and share green ideas with peers and leaders (Ekvall, 1996), greatly cultivating their green creativity. Additionally, Luu (2019) also demonstrated the important role of individual factors in the information processing process through which contextual factors influence green creativity:

employees with green organizational identity regard environmental activities as important work content (Xing et al., 2019), strengthening their identity and sense of belonging while focusing on collective and social interests, pursuing cooperation, fairness, and win-win outcomes, and forming stable environmental cognition and social motivation. Such employees are highly sensitive to supportive environments (Mostafa et al., 2015), and their individual motivations prompt them to actively seek green support from environmentally-specific servant leadership, use obtained supportive information for deep processing, reduce uncertainty in participating in environmental activities, further internalize green values, and consequently stimulate novel and useful environmental ideas.

Therefore, these theories provide evidence for the two interaction patterns of employee green creativity. The competency activation model reveals the activation effect of context cues on individual competencies, while motivated information processing theory describes the process of individuals' deep processing of contextual information through motivation. Previous research approaches that separated individual and contextual analysis violated real transmission logic, could only partially explain the impact of single factors on organizational environmental practice activities, and struggled to provide integrated suggestions for the complex paths of stimulating employee green creativity. As green management research continues to enrich, scholars have repeatedly called for attention to individual-context interaction patterns, with some responding positively (Jia et al., 2022). Additionally, it is necessary to examine substitution effects in this interaction pattern, identifying equivalent paths of corresponding individual-context factor combinations, so that when certain factors cannot be satisfied, alternative means can be used to similarly achieve green creativity improvement.

3.3.3 Summary of Theoretical Perspectives on Joint Influence Patterns Based on corresponding theoretical foundations, this study identifies two joint influence patterns of individual-contextual factors that stimulate employee green creativity: the driving path model and the interaction model. Current research primarily focuses on the driving path model, with less attention to the interaction model. Kalyar et al. (2021) noted that green creativity formation is more complex than traditional creativity, requiring the interaction of individual and environmental antecedents. Therefore, this study argues that the individual-context interaction model represents the trend for exploring employee green creativity formation processes, and future research should focus on their complex interactions to cultivate employee green creativity based on the competency activation model and motivated information processing theory.

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4. Conclusion and Future Directions

This study systematically reviews relevant literature, clarifies green creativity concepts and measurement tools, synthesizes individual and contextual factors

influencing green creativity, and examines individual-context joint influence patterns. Based on this, we propose that future green creativity research can proceed from the following aspects.

4.1 Developing Green Creativity Based on Cognitive Process Perspective As discussed, employee green creativity, as a product combining creativity and sustainable development concepts, has received widespread attention and been introduced into empirical research (Chen & Chang, 2013), with its conceptual definition fully referencing creativity concepts. Based on previous research, creativity has three perspectives: outcome, trait, and process, while green creativity is mainly defined from goal-outcome and comprehensive competency perspectives. Among them, Chen and Chang's (2013) definition of green creativity has gained widespread recognition among domestic and international scholars (Li et al., 2020; Kalyar et al., 2021; Mittal & Dhar, 2016; Maitlo et al., 2022; Song & Yu, 2018), primarily focusing on the creative degree of employee-developed green product outcomes. The psychological cognitive process of green creativity has not been explicitly explored by academia. Future research should develop a green creativity process perspective to identify more effective and hidden green creativity shaping paths from corresponding stages.

Based on the most representative four-stage theory of creative thinking in academia (Four Steps for Creative Production; Wallas, 1926), this study proposes that green creativity is a process of outputting creative green thinking products, including four stages: preparation, incubation, illumination, and verification. Specifically, in the preparation stage, employees focus on green creative problems themselves, accumulate sufficient environmental knowledge, search for relevant information, and make preliminary attempts to solve environmental problems; during this process, employees may experience negative psychological states such as low solution effectiveness or improper implementation (Zhan et al., 2015). When employees face such dilemmas, they often temporarily disengage for implicit processing, entering the incubation stage (Wallas, 1926). In other words, employees set aside the problem, superficially abandoning green creative activities to engage in unrelated activities, but subconsciously continue to focus on environmental issues, continuing information processing in a relatively hidden manner. After the incubation stage, the answer to break the dilemma may suddenly emerge, called the illumination stage (Wallas, 1926); employees experience insight accompanied by an "Aha" experience, forming new ideas to solve environmental dilemmas among chaotic information (Bowden et al., 2005). The verification stage involves employees conducting further detailed verification based on answers formed during the illumination stage to demonstrate feasibility and innovation (Wallas, 1926). Notably, the illumination and verification stages often appear together and are difficult to strictly distinguish experimentally (Zhan et al., 2015). Based on this, future research can develop new green creativity scales based on the cognitive process perspective to deepen understanding of the green creativity process perspective.

4.2 Examining the Influence of Traditional Chinese Cultural Concepts on Green Creativity Current green creativity research has been widely conducted in Chinese and Western cultural contexts, but the impact of employees' cultural value differences has rarely been addressed. Confucian thought has long permeated Chinese society. Although Chinese society has undergone tremendous changes in recent years with the intrusion of capitalist individual concepts, traditional values formed under Confucian influence—such as reverence for nature, compliance with heavenly principles, and obedience to authority—remain deeply rooted (Wang & Zhang, 2012). Unlike Western individual values, workplace Confucian traditional values may have even greater effects on Chinese employees' green creativity.

First, the collectivist cultural orientation in traditional culture makes Chinese employees tend to maintain collective interests and view themselves as part of the collective (Wang et al., 2022). Under the grand environment of green innovation development, employees pursue harmonious coexistence between humans and nature, refraining from actions that threaten the environment for short-term private gains, working together with leaders and colleagues, and being willing to undertake risky green creative activities to solve environmental problems. Second, given that innovation involves uncertainty and risk, the motivating effect of leadership on green creativity levels may be more significant for employees with high power distance orientation who are more compliant, trusting, and loyal to leaders (Tyler et al., 2000). Influenced by Confucian traditional values, Chinese employees generally have traits of obeying leaders and worshipping authority—that is, higher power distance orientation (Wang & Zhang, 2012; Wang et al., 2022). They are keen to meet leaders' needs, actively respond to green development projects promoted by leaders, and can transform conservative attitudes into proactive behaviors, improving green creativity levels. Third, long-term (short-term) orientation may also be an influencing factor of employee green creativity. This is because organizational culture focusing on long-term results prevents organizations from being limited to short-term performance (Wang et al., 2022) and instead formulates long-term training plans for employees, valuing long-term performance returns from green management. Based on this, employees internalize organizational long-term green goals as part of their own values and actively explore and propose more novel and effective green management ideas. In summary, future research can conduct in-depth local-context green creativity studies based on the workplace Confucian traditional culture perspective.

4.3 Expanding Team-Level Green Creativity Stimulation Mechanisms Environmental problems are not caused by single individuals. Relying solely on individual power cannot solve this social problem; participation from social groups is also needed (Fritsche et al., 2018). The effectiveness of green initiatives is often the result of team members' collaborative efforts. Therefore, as organizational structures become flatter and interpersonal interactions increasingly close and complex, organizations begin to rely on excellent teams to establish

market positions. Compared with individual-level green creativity, team-level green creativity has more direct effects on environmental issues and better fits today's team-centered work model (Fritsche et al., 2018). However, existing research remains at the individual level, with few empirical analyses exploring the stimulating mechanisms of team creativity (George, 2007; Farrukh et al., 2023).

Team green creativity is not a simple sum of employee creativity; it is team members' joint conception, improvement, and promotion of environmental sustainability and innovation concepts (Chen et al., 2015). This is because team members are often situated in a complex social network with frequent and complex interaction processes among members (Wu & Cormican, 2021). Therefore, this study recommends conducting team green creativity research from a social network perspective, focusing on the effects of key dynamic elements.

This study argues that similar to employee green creativity, team internal factors and external contextual factors constitute key influences on team green creativity levels. Scholars have confirmed based on cross-industry data that green HRM and environmentally-specific servant leadership can stimulate team green creativity (Ogbeibu et al., 2020; Siddiquei et al., 2021). Team internal factors such as team heterogeneity, team green behavioral intention, and team resilience may also be important factors affecting team green creativity levels. First, team heterogeneity means team members differ in demographic characteristics, cognitive concepts, and values (Heyden et al., 2013). On one hand, different industry knowledge, skill experiences, and psychological cognition bring rich resources, help break thinking frameworks, provide diversified path clues, and continuously stimulate green innovation during team interactions. On the other hand, team heterogeneity may increase cognitive conflict among members, reduce communication effectiveness and decision speed, and consequently inhibit team green creativity. Therefore, it is necessary to explore moderating mechanisms to distinguish positive and negative effects. Second, team green behavioral intention constructs an environmental protection-oriented work tone from the team level, with organizations guiding practice based on environmental responsibility attitudes (Norton et al., 2017), helping to form environmental consensus during team interactions and making it easier to motivate members to propose green creative ideas. Additionally, after the COVID-19 pandemic, many organizations face operational crises; team resilience, as the ability to recover from external adversity events, can help organizations make timely dynamic adjustments and focus on market trends (Stoverink et al., 2020) to establish green management focusing on long-term development. Future research should further explore the stimulating mechanisms of team green creativity from internal team characteristics and external contextual elements to enrich green creativity research.

4.4 Exploring the Dynamic Attributes of Green Creativity Recent research indicates that creativity has dynamic variability, and the dynamic componential model of creativity also emphasizes this viewpoint (Joshi & Dhar,

2020). Chen and Chang (2013) noted that enterprises need green creativity that can both meet environmental demands and reshape marketing rules, possessing dynamic attributes that have not yet received academic attention. Norton et al. (2017) pointed out in diary studies that employees' green behavioral intentions and actual green behaviors fluctuate significantly across different organizational contexts. Then, as time passes and market environments change, will employees' green creativity also exhibit dynamic fluctuations due to certain factors? Given that green innovation requires high upfront investment with slow results, will employees in the post-pandemic era reduce green innovation compensation perception and choose to temporarily conserve strength—that is, will green creativity regression phenomena exist? Therefore, future research should explore the dynamic changes in employee green creativity to effectively guide corporate green innovation processes.

4.5 Preventing the Moral Licensing Effect of Green Creativity While academia and industry promote the positive significance of green creativity, they should pay more attention to maintaining this competitive advantage. Previous research shows that employees' prior good deeds may become "justified" reasons for subsequent negative behaviors (Miller & Effron, 2010), and this moral licensing effect becomes more common when good deeds result from external multi-party pressures (Effron & Conway, 2015). This study calls for future research to focus on the sustainability of green creativity to prevent potential moral licensing effects.

First, Klotz and Bolino (2013) noted that failure to receive expected compensation is the trigger for employees' prior positive moral experiences turning into moral deficiency behaviors, because moral experiences only grant employees moral credit without guaranteeing the sustainability of moral behavior. Therefore, future research should explore what factors (e.g., environmental values) can effectively compensate for the temporary stimulation of green creativity. Employees with environmental values may be intrinsically driven to voluntarily protect the environment; even if prior environmental problem-solving actions did not provide generous compensation, they are still willing to engage in actions consistent with their values (Miller & Effron, 2010)—that is, they are less likely to fall into moral licensing. Second, psychological entitlement may constitute an explanatory mechanism for the moral licensing effect. The difficulty of prior green creativity generation and the lag of expected compensation violate the reciprocity principle, prompting employees to develop cognition of unequal effort and reward. After making negative judgments about their inability to obtain more resources (low psychological entitlement), employees' subsequent behaviors become inconsistent; they no longer actively engage in this unprofitable activity and instead feel justified in adopting unethical behaviors. Moreover, if prior green creativity resulted from external pressures such as organizational strategy, this would exacerbate the moral licensing effect.

4.6 Being Vigilant About the Costs of Green Creativity As green management issues receive increasing attention, existing research has repeatedly emphasized the positive effects of green creativity on individuals, organizations, and society (Bahzar, 2019; Chen & Chang, 2013). However, growth always accompanies intense "growing pains," and these beneficiary entities also need to pay high costs during this process (Luu, 2020), such as high environmental investment costs threatening daily operations, enterprise-specific green materials or technologies potentially causing supply shortages and price changes, supply chain transformation having lag periods and instability, and environmental policy changes bringing uncertainty to corporate long-term planning and investment. However, this differs from the malicious expression mechanism of traditional creativity (Zheng et al., 2019). Green creativity, motivated by "good intentions," urges employees to act with environmental protection as a prerequisite, and the negative consequences such as immature environmental protection facilities and environmental instability are costs that must be borne in forming new competitive advantages (green creativity). In summary, future research should focus on the costs required by green creativity, exploring its manifestations, roots, mechanisms, and countermeasures to shorten the "growing pain" period, reduce costs, prevent efforts to improve green creativity from being wasted, and better guarantee the effectiveness of green creativity goals.

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