

The Influence of College Students' Perception of Green Inclusive Leadership on Green Creativity: The Mediating Role of Green Intrinsic Motivation

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Abstract

Green creativity among college students is essential for achieving sustainable development goals. Leadership significantly influences the cultivation and enhancement of students' creative abilities. Grounded in Self-determination theory, this study developed and tested a research model to examine the mediating role of students' green intrinsic motivation. Data were collected from 598 college students in Hebei Province, China, and analyzed using SPSS. The results show that students' perceptions of green inclusive leadership positively affect green creativity, with green intrinsic motivation serving as a mediating factor. This research advances the knowledge domain regarding green inclusive leadership and green creativity.

Keywords: *Green Inclusive Leadership, Green Intrinsic Motivation, Green Creativity, College Students, Self-Determination Theory.*

Introduction

Green creativity is essential for individuals to protect local natural environments and develop sustainable socioeconomic systems (Clark et al., 2020; Mansoor et al., 2021). It involves addressing existing environmental challenges through innovative approaches (Mroz & Ocetkiewicz, 2021). As an extension of general creativity, green creativity emphasizes environmental sustainability and holds significant social value (Chen & Chang, 2013). Higher education institutions (HEIs) play a critical role in fostering students' green creativity, contributing to the nation's economic and social foundations. Thus, cultivating green creativity among students is not only crucial for achieving environmental sustainability but also supports broader initiatives such as green innovation. Given the increasing importance of green creativity, there has been a growing academic interest in understanding its antecedents and underlying processes in recent years (Bhutto et al., 2022; Li et al., 2020; Tuan, 2020).

Leadership plays a crucial role in shaping and fostering creativity among college students (Meng & Zhao, 2018; Shang et al., 2019). However, research on how leadership specifically promotes students' green creativity is still in its early stages, and the underlying mechanisms remain unclear (Saif et al., 2023). Inclusive leadership, in particular, has been shown to significantly influence individual creativity (Zhu & Zhang, 2020; Choi et al., 2015), innovative behavior (Javed et al., 2019; Fang et al., 2019), creative tasks (Carmeli et al., 2010), and team innovation (Ye et al., 2019). While green inclusive leadership shares elements with inclusive leadership—such as fostering a sense of belonging, valuing uniqueness, respecting differences, and promoting diversity—it uniquely emphasizes creating green value and prioritizing ecological concerns (Abdou et al., 2023; Aboramadan et al., 2022; Patwary et al., 2022; Sürücü, 2024; Thabet et al., 2023). Despite its potential, current empirical research on green inclusive leadership and its impact on students' green creativity remains limited (Saif et al., 2023).

Leadership scholars are increasingly interested in exploring the mechanisms that influence individual creativity (Chow, 2018; Tuan, 2019; Shafique et al., 2020). The effectiveness of inclusive leadership in fostering creativity is often attributed to its ability to meet followers' needs and generate motivation (Siyal

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et al., 2021; Korkmaz et al., 2022). Self-determination theory (SDT) (Deci & Ryan, 1985), a widely recognized theory of human motivation, suggests that motivation is crucial for stimulating and shaping individual behavior. Intrinsic motivation, in particular, reflects autonomy and is driven by interest, enjoyment, and internal satisfaction (Ryan & Deci, 2000). When individuals perceive their tasks as exciting, engaging, and challenging, they are more likely to exhibit creativity (Amabile, 1998). This study introduces the concept of green intrinsic motivation as a specific mechanism through which green inclusive leadership can enhance green creativity. Green intrinsic motivation refers to an internally driven passion for the environment and green initiatives, inspiring innovative ideas for protecting and preserving the ecological environment (Faraz et al., 2021; Liu & Liu, 2023). Previous empirical research has demonstrated that intrinsic motivation is essential for fostering green creativity (Li et al., 2020; Hameed et al., 2022).

Higher education institutions (HEIs) play a critical role in promoting environmental sustainability (Acosta Castellanos & Queiruga-Dios, 2022). As part of their social responsibility, HEIs are dedicated to environmental education, cultivating students' environmental awareness, and contributing to the preservation of local natural environments (Cheng, 2019; Onokala et al., 2018). The rapid expansion of China's economy has led to numerous environmental challenges (Ye et al., 2022), positioning China as one of the world's largest energy consumers. In response to increasing international pressure and stricter environmental laws, Chinese HEIs and their students have heightened their focus on environmental awareness. As HEIs aim to address environmental issues, fostering green creativity among students emerges as a promising strategy. While the impact of leadership on green creativity has been explored within the business sector (Arici & Uysal, 2022; Tuan, 2020; Sürücü, 2024), there is a notable gap in research concerning this topic in higher education (Saif et al., 2023). Therefore, examining green creativity in the context of higher education is crucial for understanding its potential contributions to environmental sustainability.

This study makes several contributions to the literature on college students' perceptions of green inclusive leadership and green creativity. First, it introduces the novel concept of college students' perceptions of green inclusive leadership, advancing both theoretical and empirical understanding. Second, by exploring how these perceptions serve as predictors of green creativity, the study addresses a gap in the existing research (Bhutto et al., 2022). Third, grounded in Self-Determination Theory, it identifies green intrinsic motivation as a crucial mediating mechanism through which students' perceptions of green inclusive leadership enhance green creativity. Finally, this research highlights the importance of higher education institutions as a relatively underexplored context for studying green creativity (Saif et al., 2023).

Literature Review

Green Inclusive Leadership and Green Creativity

Research on inclusive leadership highlights its focus on individual development and its potential to stimulate creativity (Amabile & Pratt, 2016; Fang et al., 2019; Javed et al., 2019). Inclusive leaders are known for their capacity to foster creativity by exemplifying altruism and tolerance through a deep understanding of others (Aboramadan & Dahleez, 2022; Carmeli et al., 2010; Nguyen et al., 2024; Choi et al., 2015). Recent studies have underscored the growing recognition of inclusive leadership due to its broad impact on individual, group, and organizational outcomes (Carmeli et al., 2010; Siyal et al., 2021; Korkmaz et al., 2022). Bhutto et al. (2022) were the first to propose the concept of green inclusive leadership, incorporating environmental aspects into the literature on inclusive leadership, focusing on green practices. It is characterized by the acceptance of new green concepts, engaging followers in dialogues to achieve environmental goals, and a willingness to collaborate to address organizational environmental challenges (Sürücü, 2024).

Chen and Chang (2013) define green creativity as the propensity to develop innovative methods for achieving environmental objectives, support green-oriented ideas, explore novel green concepts, and find creative solutions to environmental problems. Green creativity, centered on environmental sustainability, carries significant social and developmental implications (Li et al., 2020; Tuan, 2020; Zhang et al., 2020).

While initially proposed for the business sector to drive positive environmental impacts, green creativity also offers a competitive advantage to higher education institutions (Saif et al., 2023). It directly supports the sustainability of these institutions and indirectly contributes to environmental protection (Cheng, 2019; Clark et al., 2020; Rodríguez-Chueca et al., 2020).

Green inclusive leaders promote individuals' green creativity by fostering their concern for the environment (Bhutto et al., 2022). Under the concept of green inclusive leadership, leaders adopt an open attitude toward environmental protection, engage in discussions with subordinates about environmental goals, and consult on environmental challenges, thereby making subordinates feel that their opinions are valued, which in turn stimulates their green creativity (Patwary et al., 2022; Thabet et al., 2023). Previous research has indicated that green transformational leadership has a significant impact on college students' green creativity (Saif et al., 2023). Although there is no direct empirical evidence demonstrating the relationship between green inclusive leadership and college students' green creativity, it is plausible to expect such an association in the educational sector. In sum, it can be inferred that in the context of higher education, teachers' green inclusive leadership may increasingly stimulate students' creativity in environmental protection. Therefore, we hypothesize:

Hypothesis 1: College students' perceptions of green inclusive leadership significantly and positively predicts green creativity.

The Mediating Role of Green Intrinsic Motivation

SDT is a comprehensive framework for understanding human motivation and is considered one of the most advanced theories in the field of work motivation (Deci et al., 2017). In SDT, motivation is categorized into three types: intrinsic motivation, extrinsic motivation, and amotivation (Deci & Ryan, 2000). Intrinsic motivation is defined as the drive to perform tasks out of genuine interest, love, and passion, rather than for external rewards or benefits (Deci & Ryan, 1985). It is the highest form of motivation, characterized by engagement driven by personal interests, curiosity, and the satisfaction of the task itself, making it particularly powerful and enduring (Gagné & Deci, 2005).

In this study, we specifically focus on green intrinsic motivation rather than general intrinsic motivation. Green intrinsic motivation refers to an individual's passion for the environment and commitment to green ideals, which inspires innovative ideas for conserving and protecting the ecological environment (Li et al., 2020; Liu & Liu, 2023). This specific form of motivation is more closely aligned with the sustainability literature. Within the framework of SDT, Ryan and Deci (2000) suggest that social and environmental factors, including leadership, are crucial in shaping an individual's intrinsic motivation. SDT emphasizes three intrinsic psychological needs: relatedness, competence, and autonomy. When these needs are met, it increases an individual's level of self-determination (Briere et al., 2021; Deci & Ryan, 2000). Existing empirical research suggests that leadership can positively predict and cultivate an individual's intrinsic motivation (Afsar et al., 2016; Zhang & Bartol, 2010).

Carmeli et al. (2010) highlight that the core of inclusive leadership is a relational leadership style, where leaders build high-quality relationships with followers. Green inclusive leaders are willing to listen to followers' voices and attend to their needs, appreciate their efforts, and establish a secure psychological distance, thus fulfilling followers' needs for interpersonal relationships (Bhutto et al., 2022). Green inclusive leaders commit to helping followers grow and succeed in achieving their goals, thus meeting their need for competence (Thabet et al., 2023). Additionally, green inclusive leaders meet employees' need for autonomy by empowering them and giving them the freedom to undertake environmental initiatives (Patwary et al., 2022).

In the context of education, research suggests that fulfilling students' basic psychological needs is central to effective teacher leadership, which naturally enhances students' intrinsic motivation (Bolkan et al., 2011; Kant & Asefa, 2022). Building on this concept, we hypothesize that green inclusive leadership fosters green intrinsic motivation among college students.

Hypothesis 2: College students' perceptions of green inclusive leadership significantly and positively predicts green intrinsic motivation.

Intrinsic motivation drives individuals to engage in activities that are inherently enjoyable and satisfying. For green creativity to flourish, it must be internalized to become more intrinsically motivated (Faraz et al., 2021). Increasing empirical evidence highlights the importance of intrinsic motivation in shaping creativity (De Jesus et al., 2013; Tan et al., 2019; Shafi et al., 2020; Ansari et al., 2023). In education setting, Intrinsic motivation has been identified as a central variable within SDT for predicting student learning outcomes (Alamri et al., 2020; Sun & Gao, 2020). Following this notion, it is logical to expect that students with high levels of green intrinsic motivation may derive greater enjoyment from the process of generating environmentally beneficial ideas. Based on the above discussion, we propose the following hypothesis:

Hypothesis 3: Green intrinsic motivation significantly and positively predicts college students' green creativity.

From the perspective of SDT, social and contextual factors, including leadership, play a crucial role in influencing an individual's intrinsic motivation (Ryan & Deci, 2000). Building on this idea, individual innovative ideas aimed at addressing environmental issues are shaped by green inclusive leadership, which helps align green intrinsic motivation with creativity, leading to outcomes such as green creativity (Liu, 2024). To support this hypothesis with empirical evidence, existing literature identifies green intrinsic motivation as a mediating factor between green transformational leadership and green creativity (Li et al., 2020). Recent studies have also found that proactive environmental motivation, including intrinsic motivation, serves as a mediating pathway between inclusive leadership and individual creativity and innovative behavior (Siyal et al., 2021). Furthermore, Liu et al. (2024) confirmed that green intrinsic motivation mediates the relationship between the perceived value of green creativity and green creativity. Thus, we propose:

Hypothesis 4: Green intrinsic motivation mediates the relationship between college students' perceptions of green inclusive leadership and green creativity.

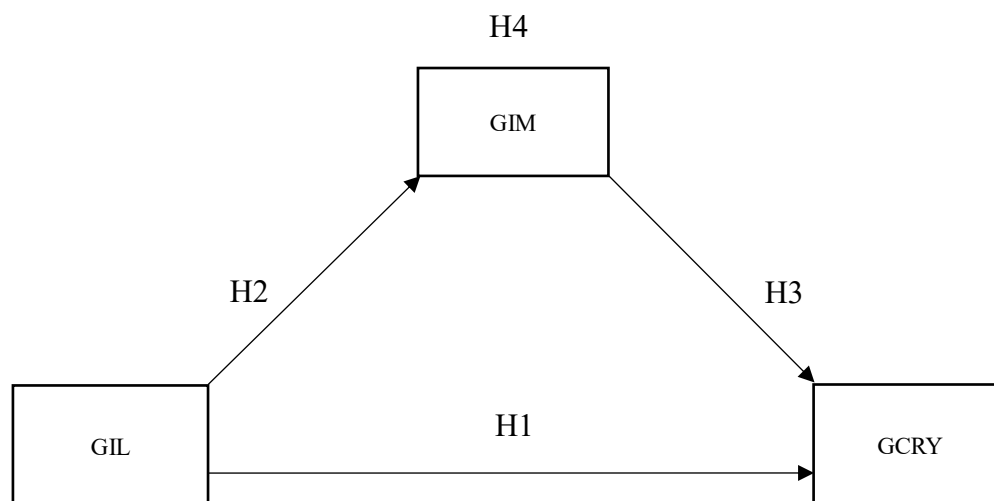


Figure 1. Hypothetical Model

Note: GIL: Green Inclusive Leadership; GIM: Green intrinsic motivation; GCRY: Green Creativity.

Methods

Participants and Procedures

The study sample consisted of 598 students from various majors at two colleges in Hebei, China. A convenience sampling method was employed for this study. This non-probability sampling approach involves selecting participants based on their willingness to participate and ease of access (Creswell & Creswell, 2017). Data collection was conducted through two modes: an online survey distributed via student email and a face-to-face survey administered in classroom settings. The online anonymous survey was hosted on the WJX.CN platform (www.wjx.cn), ensuring confidentiality and ease of access for participants. To be eligible for the study, participants were required to be enrolled in elective course related to environmental sustainable themes during the semester, which provided them to interact with their lecturers and evaluate their leadership style.

Measures

All variables in this study were assessed using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). To ensure the accuracy of the translated questionnaire, we utilized the translation and back-translation method recommended by Brislin (1970). Initially, the English version of the questionnaire was translated into Chinese, and then a back-translation was performed from Chinese to English. This process involved comparing the original and back-translated versions to identify discrepancies, followed by necessary modifications and adjustments to enhance the questionnaire's accuracy and ensure its suitability for the higher education context.

College students' perception of green inclusive leadership was measured using a 9-item scale developed and validated by Carmeli et al. (2010). This scale was applied in the study to assess the leadership styles of lecturers who taught elective courses on environmental sustainability themes during this semester. The reliability of this scale was demonstrated with a Cronbach's alpha coefficient of 0.94, indicating high internal consistency. Green intrinsic motivation was assessed using a 6-item scale developed by Faraz et al. (2021), which also showed good reliability with a Cronbach's alpha of 0.86. Green creativity was measured using a 6-item scale from Chen and Chang (2013), with a Cronbach's alpha of 0.89, indicating strong internal consistency.

Data Analyses

The collected data were analyzed using SPSS Statistics software. Descriptive statistics and correlation analyses were conducted to provide an overview of the sample characteristics and to examine the relationships between variables. To test the research hypotheses, the PROCESS macro for SPSS, as described by Hayes (2018), was utilized. The mediating effect was further assessed using 5,000 bootstrap samples and a 95% confidence interval, which enhances the robustness of the findings by providing more accurate estimates of indirect effects.

Results

Correlation Analysis

Descriptive statistics and Pearson correlation analyses were conducted to examine the relationships among the study variables. Table 1 presents the means, standard deviations, and correlation coefficients for each variable. The Pearson correlation coefficients ranged from 0.392 to 0.534, all of which were statistically significant at the $p < 0.001$ level. Specifically, the results show that college students' perceptions of green inclusive leadership are significantly positively correlated with their green intrinsic motivation ($r = 0.392, p < 0.001$). Additionally, students' perceptions of green inclusive leadership are significantly positively correlated with green creativity ($r = 0.486, p < 0.001$). Moreover, green intrinsic motivation is significantly

positively correlated with college students' green creativity ($r = 0.534, p < 0.001$).

Table 1. Descriptive Statistics and Correlations Analysis

Variables	M	SD	GIL	GIM	GCRY
GIL	4.077	0.997	1		
GIM	3.981	1.051	0.392***	1	
GCRY	3.551	1.023	0.486***	0.534***	1

Note: M: Mean, SD: Standard deviations; GIL: Green Inclusive Leadership; GIM: Green intrinsic motivation; GCRY: Green Creativity. *** $p < 0.001$.

Hypotheses Testing

To examine the mediating effect of green intrinsic motivation on the relationship between college students' perceptions of green inclusive leadership and green creativity, PROCESS Model 4 was used (Hayes, 2017). The results of this analysis are presented in Table 2. First, Model 1 demonstrated that college students' perceptions of green inclusive leadership significantly and positively predicted green creativity ($\beta = 0.499, p < 0.001$), supporting Hypothesis 1. Second, Model 2 showed that college students' perceptions of green inclusive leadership significantly and positively predicted green intrinsic motivation ($\beta = 0.413, p < 0.001$). Additionally, green intrinsic motivation significantly and positively predicted green creativity ($\beta = 0.395, p < 0.001$). Further analysis using Model 3 indicated that, after including green intrinsic motivation as a mediating variable, the perception of green inclusive leadership still significantly and positively predicted green creativity ($\beta = 0.336, p < 0.001$). The coefficient (β) decreased from 0.336 to 0.499, suggesting that green intrinsic motivation partially mediates the relationship between college students' perceptions of green inclusive leadership and green creativity, thereby supporting Hypothesis 2.

Table 2. Green Intrinsic Motivation Mediation Model Analysis

Variables	Model 1		Model 2		Model 3	
	GCRY		GIM		GCRY	
	β	t	β	t	β	t
GIL	0.499	13.587***	0.413	10.398***	0.336	9.299***
GIM					0.395	11.519***
R^2	0.486		0.392		0.613	
F	184.606***		108.111***		179.037***	

Note: GIL: Green Inclusive Leadership; GIM: Green intrinsic motivation; GCRY: Green Creativity. *** $p < 0.001$.

To further examine this result, a bias-corrected nonparametric percentile bootstrap method was employed to test the mediating effect of green intrinsic motivation. The analysis revealed an indirect effect of 0.163, with a 95% confidence interval (CI) ranging from 0.116 to 0.217, which does not include zero. The direct effect was 0.336, with a 95% CI ranging from 0.265 to 0.407, which also does not include zero. These results further confirm the significant mediating effect of green intrinsic motivation. Further details are provided

in Table 3.

Table 3. Mediation Effect with Bootstrapping

Path	Effect	95% LLCI	95% ULCI
Direct effects GIL→GCRY	0.336	0.265	0.407
Indirect effects GIL→GIM→GCRY	0.163	0.116	0.217
Total effects GIL→GCRY	0.499	0.427	0.571

Note: Bootstrap random sampling 5,000 times; LLCI: Lower limit of confidence interval; ULCI: Upper limit of confidence interval. GIL: Green Inclusive Leadership; GIM: Green intrinsic motivation; GCRY: Green Creativity. Effect means standardized coefficients.

Discussion

This study explored the relationships between college students' perceptions of green inclusive leadership, green intrinsic motivation, and the prediction of green creativity. The results indicate that green inclusive leadership has a direct and significant positive impact on green creativity. This finding aligns with previous empirical studies that have examined the role of green inclusive leadership in predicting individual green creativity (Bhutto et al., 2022; Sürücü, 2024). Green inclusive leaders employ unconventional methods to evaluate followers' creativity, value and encourage individual differences, and respect diversity and uniqueness. This inclusive approach fosters creativity among followers (Carmeli et al., 2010). Specifically, green inclusive leaders encourage the creation of an open, inclusive, and cooperative campus environment, which allows students to feel that their green ideas and thoughts are respected and valued. As a result, students gain confidence in experimenting with new green projects, thereby fostering the development of green creativity.

Our findings support the hypothesis that green inclusive leadership positively influences green intrinsic motivation, which is consistent with previous literature, as green leadership intrinsically motivates individuals toward environmental protection and sustainable development (Li et al., 2020). The study demonstrates that encouragement and recognition from green inclusive leaders enhance students' intrinsic interest in and desire for green initiatives. Latest study shows that inclusive leaders aim to meet followers' needs for autonomy, competence, and relatedness, which is essential for enhancing their levels of self-determination (Deci et al., 2017). By addressing these needs, green inclusive leaders empower their followers to actively participate in environmental protection, leading to intrinsic satisfaction.

Furthermore, when individuals' needs for autonomy, competence, and relatedness are satisfied, intrinsic motivation is enhanced, which subsequently improves positive outcomes at work (Gagne & Deci, 2005). This study underscores the importance of green intrinsic motivation for fostering green creativity, expanding upon traditional research that typically examines the effects of general intrinsic motivation on individual creativity (Shafi et al., 2020). Moreover, the significant positive relationship between green intrinsic motivation and green creativity is also theoretically supported by SDT (Deci & Ryan, 1985). By introducing the concept of green intrinsic motivation and demonstrating its effectiveness in promoting green creativity, this study extends the boundaries of SDT.

Additionally, our results confirm the mediating role of green intrinsic motivation in the relationship between green inclusive leadership and green creativity. It is consistent with previous research, which suggests that intrinsic motivation mediates the relationship through which inclusive leadership influences individual innovation behaviors and creativity (Siyal et al., 2021; Zafar et al., 2024). This finding can also be

explained through the lens of SDT (Deci & Ryan, 1985). We posit that green inclusive leaders, by valuing students' perspectives on environmental protection, stimulate their basic psychological needs, thereby enhancing their green intrinsic motivation and actively encouraging their participation in green innovation.

Implications

Theoretical implications

This study makes several contributions to the field of green management. First, it extends traditional inclusive leadership theory by integrating the concept of "green" or environmental goals. While conventional inclusive leadership theory emphasizes that leaders should support their team members in growing and realizing their potential, green inclusive leadership builds on this foundation by highlighting how leaders can also advance organizational and environmental objectives related to sustainability and ecological protection. This adaptation of inclusive leadership theory underscores the importance of environmental stewardship alongside individual development. Second, this research adds to the existing empirical literature by investigating the direct impact of college students' perceptions of green inclusive leadership on green creativity. This contribution provides new insights into how perceptions of green inclusive leadership influence creativity related to environmental innovation among university students. Third, the study introduces green intrinsic motivation as a precursor to green creativity, thereby expanding the scope of SDT beyond its traditional focus. While previous research has typically explored how general intrinsic motivation predicts creativity, this study emphasizes the role of green intrinsic motivation specifically, broadening the application of SDT to include environmental considerations. Fourth, by examining the mediating role of green intrinsic motivation in the relationship between perceptions of green inclusive leadership and green creativity, this study enriches the literature on SDT. It demonstrates how green intrinsic motivation acts as a mechanism through which green inclusive leadership impacts green creativity. This theoretical perspective not only enhances the boundaries of SDT but also provides a clearer understanding of how leadership influences creativity in an environmental context.

Practical Implications

The findings of this study offer several practical implications for higher education institutions. First, the research underscores the importance of green inclusive leadership in fostering green creativity among students. To leverage this, university leaders could prioritize development of educators who embody the principles of green inclusive leadership. This can be achieved by establishing systematic and normative human resource practices that focus on selecting educators with a demonstrated commitment to environmental sustainability. For current faculty members, institutions should provide regular training and professional development opportunities on environmental sustainability. This will help educators better understand and implement green inclusive leadership practices, ultimately supporting a more sustainable and innovative academic environment. Second, universities could integrate environmental sustainability and green principles into their curricula. This can be accomplished by incorporating sustainability topics into course content, supporting student-led green innovation projects, and introducing role models who exemplify green practices. Additionally, providing opportunities for hands-on environmental practice, such as through internships or campus sustainability initiatives, can further engage students. These measures will not only enhance students' interest in green development but also foster their green intrinsic motivation, thereby encouraging greater involvement in environmental innovation.

Limitations and Future Research

While this study offers valuable theoretical and practical insights, it is not without limitations. First, the cross-sectional design of the data collection limits the ability to draw causal inferences. Future research could consider employing longitudinal studies to better understand the causal relationships among green inclusive leadership, green intrinsic motivation, and green creativity. Second, the study's sample was limited to college students from higher education institutions in Hebei Province, China. To enhance the generalizability of the findings, future studies should replicate the model in diverse geographical locations and across different educational contexts. Third, this study focused solely on green intrinsic motivation as

a mediating variable. Future research could explore additional mediators that might influence the relationship between green inclusive leadership and green creativity. Potential mediators include green empowerment (Khan & Muktar, 2024), green knowledge sharing (Rubel et al., 2021), and green trust (Li et al., 2021).

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