Green Transformational Leadership and Employee's Green Creative Behavior: A Moderated Mediation Analysis

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Abstract

The present research devises an indispensable framework to examine how and when creative behavior green can be inculcated in employees by underpinning social learning theory. Accordingly, this research examines the impact of green transformational leadership on green psychological climate that eventually translate into green creative behavior. The scope of this research is further widened by considering green moral identity as a contingency factor. In the current study, we use a quantitative research design with a deductive theory development approach since it has a post-positivist point of view. This study used a single-method quantitative design that employed a time-lagged design to collect data through a survey strategy. The data is collected from the School Education Department Punjab, Pakistan from 365 teachers/respondents. Smart PLS is employed in the present research for analysis. It is noted that there is a positive direct and indirect correlation between green transformational leadership, a green psychological climate, and green creative behavior. This highlights the significance of green transformational leadership in fostering green creative behaviors by fostering a green moral identity in their followers. The cultivation of green moral identity may increase the effectiveness of green transformational leadership in helping followers develop green creative behavior, as evidenced by the strong positive moderating effect of green moral identity on the relationship between green transformational leadership and green psychological climate. This research has important implications for institutes as individuals' efforts to foster green creative behavior through the development of green moral identity among followers and the culmination of a green psychological climate in the organization.

Introduction

Recently, organizational scholars have concentrated on employee green behavior since evidence indicates that individual employee behavior can significantly affect and improve the firm's environmental performance (Srivastava et al., 2024). An increasing amount of research has also demonstrated that employee participation is necessary for environmental management techniques to be sustainable (Paillé, Boiral, & Chen, 2013). The causes of employees' green creative activity, however, have not yet been sufficiently discussed (Nurwahdah & Muafi, 2022). In particular, this article aims to discuss the

elements that influence the green creative behavior and operations of employees. Scholars have recognized the importance of being green and sustainable in advancing the growing global and local challenges related to environmental degradation issues. A sufficient body of research has been conducted, but it primarily focuses on pertinent organizational environmental concerns. Through an exploration of the causal linkages between the variables being studied, this study seeks to explain. Usually quantitative in nature quantitative in nature, explanatory research uses a logical approach and tests theories using facts. The research on green creative behavior (GCB) is still in its infancy. A new, comprehensive model developed and

tested in this study in response to current recommendations for an emphasis on GCB promotion within institutions. It suggests that transformational leadership, backed by the social learning theory, might help employees develop green behaviors. Thus, before creating the questionnaire, researchers must decide which theories used to examine the connections between the variables in this kind of study (Ghauri et al., 2020). This study addresses a crucial research question: "How and when green behavior be instilled in employees?" This overarching question can be broken down into the following specific inquiries: a) How does transformational leadership influence Green Creative Behavior (GCB)? b) Ho w does a green psychological climate mediate the relationship between transformational leadership and GCB? c) What is the moderating effect of leaders' green moral identity on the indirect relationship between transformational leadership and GCB?

This study seeks to contribute significantly to the evolving Green Consumer Behavior (Farrukh et al., 2022). It aims to enhance our understanding of the factors influencing GCB by establishing boundary conditions and a mediation mechanism. While previous research has explored various variables affecting GCB, there has been limited focus on multilevel aspects of this behavior. Therefore, the objective of this study is to advance the current discussion on multilevel GCB research. Furthermore, it is said that transformative leaders validate and legitimize normative conduct role models. It is possible for transformational leaders to subtly convey morally upright ideas, attitudes, beliefs, and behaviors. They can influence how staff members view environmental sustainability policies, practices, and processes, and they can work harder to create a green psychological environment. Since transformational leaders are personally motivated to safeguard the environment, the contingency impact of their pro-environmental attitude can reinforce the bond and association between transformational leadership and the green psychological climate. Employees are encouraged to exhibit green behavior when they receive indications from the organization's culture that being environmentally conscious is highly valued. Further, moderation of green moral identity can alter the association between green psychological climate and green creative behavior. When employees are ecologically well aware and have profound thoughts of environmental issues, they are more inclined towards examine green actions. Four characteristics of green transformational leadership were identified: intellectual stimulation, individualized consideration, inspirational motivation, and idealized impact. Building relationships with clients and rewarding environmentally conscious conduct is a key component of the leadership's ability to motivate employees (Srivastava et al., 2024). Green transformational leadership has a direct impact on the green habits of leaders. Green transformational leaders impact their workforce through their green strategies, objectives, goals, values, and ideas. Green transformational leadership enables leaders to recognize the value and viability of adopting green practices, as well as the fact that these actions are expected and supported by organizations and that they should model these practices. In current study Social Learning theory is adopted. Both the process of learning and the process of social conduct are covered by social learning theory. Thus, this theory suggests that there are two ways in which workers and individuals might pick up and exhibit new behaviors: by imitation and observation. Furthermore, social scientists have claimed According to learning theory, cognition is the process of learning. This procedure occurs in social context by the explicit directives and instructions of subordinate and superior authorities, or only through observation, whether in the absence or presence of motor reproduction and direct reinforcement not present. Furthermore, observation will not only improve the learning process but it may also come about as a result of strong and perceptive awareness of incentives and penalties, and this Vicarious reinforcement refers to the entire process.

The school education department now has a tool to motivate staff to operate sustainably and creatively thanks to the current research strategy. Teachers' ought to understand their responsibility to uphold a sustainable environment and foster innovative conduct in educational institutions. Leaders should evaluate whether their organization has the resources needed to support these initiatives and figure out how to enhance them in order to ensure that green transformational leadership is translated into green creative behavior (Naderi, Pourakbari-Kasmaei, & Abdi, 2019). Leaders can also keep an eye out for, identify, and help reduce employees' inclination to continue functioning in a reactive, risk-averse, and imitative manner in order to further promote green creative behaviors (Rodrigo-Alarcón et al., 2018). Given the increasing importance of environmental concerns and green innovation, researchers are concentrating on determining the mechanisms that foster creativity and green creative behavior (GCB). This study is among the first to examine the role of GPC as a mediator and GMI as a moderator. This study shows that green transformational leaders influence their followers' green and innovative behavior within the School Education Department, which validates earlier research (Mittal & Dhar, 2016). By showing that green transformational leaders influence their subordinates' green creative behavior in the school education department, this study validates earlier research (Mittal & Dhar, 2016). This study creates a green behavior among the employees. This will help to save the resources of organization as and when the psychological climate exists in the educational institutes. The employees of educational institutes perform green practices by their own will.

Literature Review and Hypothesis Development

Relationship between Green transformational leadership and Green Psychological Climate

Green transformational leadership (GTFL) is defined *as" a leadership behavior wherein the key goal of leadership is to provide clear vision, inspiration, and motivation to the employees and also support their developmental needs toward*

*the achievement of the environmental goals of the organization (*Mittal & Dhar, 2016*)* Leaders demonstrating strong environmental principles and an unwavering dedication to sustainability are more inclined to adopt green transformational leadership methodologies. Such environmental principles often stem from individual experiences, academic training, and an intensified consciousness of environmental challenges (Al-Ghazali et al., 2022). A company that emphasizes sustainability and encourages a culture of ecological responsibility can greatly impact leaders to embrace green transformational leadership. This impact is reflected in the adoption of policies, practices, and a mission that together highlight environmental stewardship (Arshad, Qadeer, & Mahmood, 2021). Organizations that adopt green transformational leadership typically adopt more sustainable practices, leading to decreased waste, reduced emissions, and improved overall environmental performance (Zaid & Yaqub, 2024). This leadership approach fosters creativity and innovation, particularly in the development of sustainable products and processes. Consequently, employees are inclined to engage in divergent thinking and generate eco-friendly solutions (Maitlo et al., 2022).

Green Psychological Climate The green psychological climate is defined as *"employee perceptions regarding the organizational attributes and behavioral norms within a company that pertains to environmental sustainability" (*Dumont, Shen, & Deng, 2017*)*. Green Human Resource Management Practices (GHRMP) and corporate environmental strategies play a crucial role in creating an atmosphere that encourages pro-environmental actions among employees. These strategies and practices together foster a favorable psychological green environment in organizations (AlKetbi & Rice, 2024). Transformational leadership influences organizational performance by its effect on employees' psychological climate (Nohe & Hertel, 2017). The leader can shape the supportive climate in an organization. At the organizational level, a recent study showed that corporate environmental strategy could positively affect green psychological climate (Nohe & Hertel, 2017). As the creator of organizational strategy, green transformational leadership also impacts the green psychological climate. Green transformational leaders set a vision of green development for the organization (Tang et al., 2018). A positive correlation is present between green transformational leadership and the creation of a green psychological climate in organizations (Poperwi, 2024). Therefore, under the light of above discussion suggest the following hypothesis:

Hypothesis 1: *There is a positive relationship between the green transformational leadership and green psychological climate.*

Green Psychological Climate and Green Creative Behavior
The green psychological climate is defined as "employee perceptions regarding the organizational attributes and behavioral norms within a company that pertains to environmental sustainability" (Dumont et al., 2017). Research documented that green innovation climate foster the green creative behavior among the employees (Akhtar et al., 2024). The research concluded that green autonomy enhances development of green creative behavior in the business organization (Maitlo et al., 2022). Studies have shown that a green psychological climate greatly encourages pro-environmental actions among employees (Tucholska, Gulla, & Ziernicka-Wojtaszek, 2024). A positive correlation exists between a green psychological climate and employee well-being within organizations (Naz et al., 2023). In recent years, substantial research has been conducted to examine the influence of a green psychological climate within organizations on their financial performance (Naz et al., 2023). The research has noted that when an organization promote a green psychological climate, employees are more inclined to engage in green creative behaviors (Maitlo et al., 2022). Research concluded that there is positive relationship between the green psychological climate and green creative behaviour (Li et al., 2023). The research examined that there is direct and significant relationship between the green psychological climate and green creative behavior (Arulrajah & Senthilnathan, 2020). Research noted that the green psychological climate foster establishment of green creative behavior (Li et al., 2023). These studies collectively demonstrated that their positive relationship between the green psychological climate and green creative behavior (Shafiq et al., 2023). Under the light of above discussion, the research proposed the following hypothesis.

Hypothesis 2: *There is a positive relationship between a green psychological climate and Green creative behavior.*

Mediation of Green Psychological Climate
Transformational leadership impacts organizational performance through its influence on the psychological climate of employees (Nohe & Hertel, 2017). The leader can influence the encouraging atmosphere within an organization. At the organizational level, a recent study indicated that environmental strategies in corporations might enhance the green psychological climate (Norton et al., 2017). As the architect of organizational strategy, green transformational leadership also influences the green psychological environment. Green transformational leaders establish a vision for sustainable development within the organization (Tang et al., 2018). There exists a positive link between green transformational leadership and the establishment of a green psychological atmosphere within organizations (Poperwi, 2024). The study observed that when a company fosters a green psychological climate, workers are more likely to participate in green creative (Maitlo et al., 2022). Research found that a positive correlation exists between the green psychological climate and green innovative behavior (Li et al., 2023). The study investigated the existence of a direct and substantial correlation between the green psychological climate and green creative behavior. Studies indicated that a green psychological environment promotes the development of green creative behavior (Li et al., 2023). These research efforts collectively

showed that there is a positive correlation between the green psychological climate and green creative behavior (Shafiq et al., 2023). These studies collective examined that the relationship between the green transformational leadership and green creative behavior is mediated by green psychological climate (Al-Ghazali et al., 2022). Under umbrella of above discussion, the research suggests the following hypothesis.

Hypothesis 3: *The relationship between the green transformational leadership and green creative behavior is mediated by green psychological climate.*

Moderation of Green Moral Identity

Green moral identity is defined as "*A self-concept organized around a set of moral characteristics subordinated to a distinct mental identity*" (Aquino & Reed II, 2002). The research investigated that green moral identity moderates the relationship between green transformational leadership and green psychological climate (Al-Ghazali et al., 2022). People who strongly identify with pro-environmental values, marked by a robust green moral identity, tend to view and react positively to green transformational leadership behaviors. This increased openness can subsequently aid in fostering a sustainable psychological environment within the organization. In particular, workers who regard environmental sustainability as a fundamental part of their moral identity may align better with leadership efforts that highlight environmental responsibility, thus strengthening and aiding in the creation of an organizational culture that emphasizes sustainable practices and values (Alwali & Alwali, 2024). This idea suggests that green transformational leadership, which fosters environmental responsibility and sustainability, can inspire employees to synchronize their actions with the organization's environmental objectives. Nevertheless, this effect is expected to be more pronounced among those who consider environmentalism a fundamental part of their moral identity, as they tend to embrace and actively champion green leadership, thus enhancing the leadership's influence on organizational environmental results (Pérez et al., 2025). Workers who possess a robust green moral identity are more inclined to view green transformational leadership as genuine, which in turn enhances their efforts in promoting a green psychological climate in the workplace (Alwali & Alwali, 2024).

Social learning theory asserts that individuals are more likely to be influenced by leaders who align with their values. Consequently, green moral identity serves as a moderating factor in the relationship between green transformational leadership and the green psychological climate, as employees with a strong environmental orientation are more predisposed to support and internalize green initiatives (Ruan, Chen, & Zhu, 2022). Recent studies show that green transformational leadership has a positive effect on employees' pro-environmental actions. Additionally, this effect is greatly intensified when employees' individual values, especially their environmental moral identity, correspond with the organization's ecological goals (Sachdeva & Singh, 2024). Moral identity significantly influences how deeply employees participate in sustainable practices at work. Workers who possess a robust green moral identity are more inclined to view environmental responsibility as an essential personal value, motivating them to engage in and back sustainability efforts within the organization. This alignment of individual values with organizational objectives promotes increased involvement in environmentally friendly actions and strengthens the overall dedication to sustainable practices (Bhattacharya et al., 2023). Workers who have a deep moral dedication to environmental matters are more inclined to resonate with and feel inspired by eco-friendly leadership, resulting in better outcomes for the organizational atmosphere. This connection between individual values and leadership behaviors boosts employees' involvement in sustainability efforts, thus creating a more supportive and eco-friendlier organizational atmosphere (Orgun et al., 2024). Green moral identity has a substantial impact on employees' reactions to green transformational leadership, playing an essential role in influencing their involvement in sustainability-related initiatives. The alignment of individual environmental values with leadership practices not only boosts employees' openness to green leadership but also aids in fostering a supportive green psychological climate in the organization (Alwali & Alwali, 2024). Thus, the following hypothesis is suggested:

Hypothesis 4: *The relationship between the green transformational leadership and green psychological climate is moderated by green moral identity such that the relationship is strengthened when the green moral identity is high than when it is low.*

Research Methodology

This research was conducted under the umbrella of post positivist philosophy by using quantitative research with deductive theory approach. This study established the comprehensive association of servant leadership at employee well-being by mediation of job satisfaction under the boundary condition of job demand and job resource underpinning the social exchange theory and examined that relationship is a measurable phenomenon. Further this study indicates the variable illuminating relationship by developing theoretical framework in context of cause and effect. Furthermore. This research used mono method and time break strategy to collect data through survey questionaries. Additionally, the unit of analysis is used individually in this comprehensive research framework. The data is collected through employees of all variables in this study.

Data Collection and Sampling Strategy

This research utilizes method to data obtaining through the implementation of two surveys at two definite timestamps. In the province of Punjab, the population of this research study contains public sector schools that are directed by the school education department. In the first stage, 190 public sector schools were determined by using a random sampling technique. We requested for the engagement of senior management in the surveys by explicitly defined the purpose of this research study. Finally, we

approved authorization from 155 schools located in Punjab. We organized ethical norms and privacy agreement with management of school and further made a commitment to privacy. Subsequently, privacy and moral compliance forms were formalized, and Privacy preservation and commitments were improved. With the direction of the elected schools, 775 employees were selected for data obtaining in this research study. The suggested sample for this study consists of 775 employees. The objective of the study was revealed to the intended participants, who were requested to complete surveys while safeguarding their identities. To reduce common method biases, a time-lagged strategy was utilized, gathering data through three separate stages with three surveys distributed. Three of these questionnaires were aimed at employees. The surveys were conducted every three weeks, with data gathering happening from August 2024 to September 2024. The strategy for delivery and collection involves gathering data from participants. The initial employee survey (at time 1) assessed employees' views on their green transformational leadership and green moral identity. Out of 775 questionnaires distributed, 500 completed ones were returned, resulting in a return percentage of 64.50%. The second employee survey (at time 2) examined employees' views on the green psychological climate and green creative behaviors. In this phase, 500 questionnaires were distributed to employees who participated in the initial surveys, and 365 (73%) questionnaires were returned.

Measure

All the constructs were assessed using instruments commonly employed in literature. The 5-point Likert scale ranging from strongly disagree to strongly agree was used to assess all the variables involved in this study. The measurement of green transformational leadership is determined by the tool introduced by Chen and Chang, (2013). This scale is made up of 06 items. The alpha value of the Cronbach alpha is 0.935. The green psychological climate is calculated by the tool provided by Norton et al. (2017). This scale comprises 5 items. This scale revealed that the Cronbach's alpha value is 0.927 in the findings. Additionally, the green moral identity is assessed using the scale suggested by Aquino and Reed II, (2002). This tool encompassed 11 items. The alpha value of the cronbatch is 0.894. Lastly, the green creative behaviour is assessed using the tool suggested by Chen and Chang (2013). This scale includes 7 items. The alpha value for the cronbatch is 0.924.

Analysis Strategy

Before hypothesis testing, preliminary data analyses were conducted to check for missing values, verify data accuracy, detect possible outliers, and assess the normality of the data distribution. To assess the validity of the scale within the research framework using SPSS and Smart PLS. Conducive validity was evaluated through factor loading and average variance extracted (AVE), verifying that item loads exceed the threshold for the variable (Cheung et al., 2024). Assessing reliability in SPSS through Cronbach's Alpha demonstrated consistency, with a

value greater than 0.7 identified as within the normal range. Additionally, Smart PLS assesses reliability by requiring an internal consistency of 0.7 CR (Sobaih & Elshaer, 2022). Descriptive statistics provide a concise overview of data that includes mean, variability, symmetry, shape, and distribution. Crucial for evaluation (Paulson et al., 2021). Generate a correlation matrix applying Pearson coefficients to analyze the connections between different variables. Smart PLS was employed for hypothesis testing in research concerning servant leadership, job satisfaction, employee well-being, job resources, and job demands. The evaluation involved measuring validity, reliability, exploring structural relationships, and mediating effects (Cheung et al., 2024).

Data Analysis and Result

As discussed above, the data for the present research were collected from multiple sources (middle managers and finance managers) and multiple firms. Accordingly, Table 1 presents the respondents' and firms' characteristics. Of the 585 middle managers, 64.2% were males. Concerning the middle managers' age, approximately 5.64% were between 20 and 25 years of age, 37.23% ranged from 26-30 years, and 57.13% were in the age bracket of 31-40 years. In terms of educational background, 11.79% had graduated with a degree, 43.01% had a master's degree, and 45.20% had an education level higher than a master's degree.

Table 1: Teachers' Characteristics.

	Profile	Frequency	Percent
Gender	Male	244	66.8
	Female	121	33.2
Age	25-35	79	21.6
	36-45	201	55.1
	46-60	85	23.3
Education	16 years	122	33.4
	18 years	235	64.4
	above 18 years	8	2.2
Service	6-10 years	60	16.4
	11-15 years	130	35.6
	above 15 years	175	47.9

The characteristics of the employees were provided in Table 2. Of the 365 employees in the sample, 244 (66.8%) were men and 121 (33.2%) were women. Furthermore, three age brackets 25–35, 36–45, and 46–60 were used to determine age. It was discovered that 79 (21.6%) of the employees were between the ages of 25 and 55, 201 (55.1%) were between the ages of 36 and 45, and 85 (23.3%) were between the ages of 46 and 60.

Table 2: Scale Validity and Reliability.

Variables	Items	Alpha	AVE	MSV	CR
Green transformational Leadership	5	0.95	0.744	0.84	0.95
Green Moral Identity	11	0.89	0.775	0.54	0.94
Green Psychological Climate	5	0.92	0.712	0.63	0.92
Green Creative Behavior	5	0.79	0.71	0.67	0.72

Notes: CR is the composite reliability, AVE presents the average variance extracted, and MSV is the maximum shared variance

Table 2 presents the validity and reliability of the scales

employed in this research and shows that the values are within a satisfactory range. For instance, the value of the average variance extracted (AVE) must be above 0.50, and the maximum shared variance (MSV) should be below the AVE to establish validity. Further, the composite reliability and Cronbach's alpha should be higher than 0.70 and 0.60, respectively, to confirm the reliability of the scale (Hair, Ringle, & Sarstedt, 2013). Accordingly, we found an AVE value above 0.50, and the value of MSV was also less than that of the AVE. Moreover, Cronbach's alpha and composite reliability were higher than the threshold level needed to establish reliability. For example, composite reliability was higher than 0.80, and Cronbach's alpha was higher than 0.70 for all the underlying concepts. Thus, the results presented in Table 2 indicate that there was no problem regarding validity and reliability.

Table 3 reports the summary statistics and bivariate correlations

among the study variables. The central tendency of the data is presented by the mean values and the dispersion by the standard deviation. Further, the data normality is tested by skewness and kurtosis. For instance, the mean values for GTL were 4.39, and the standard deviation was 0.46, which is not too high or low. Similarly, the skewness and kurtosis values were also found to be in the normal range + 1.96 (Tabachnick et al., 2007). In addition, the bivariate correlation analysis revealed modest correlation values, and thus, there was no issue of multi-collinearity. We also noted the values of correlation coefficients in the supposed directions. For example, GTL and Green Creative Behavior were significantly and positively linked (0.54, p < 0.01). Likewise, the correlation between organizational innovation and competitive advantage was also found to be statistically significantly positive (0.57, p < 0.01). Similarly, we also noted the positive and statistically significant correlation of competitive advantage with GTL (0.49, p < 0.01).

Table 3: Descriptive Statistics and Correlation.

	Mean	SD	Skew	Kurt	1	2	3
1.Green Transformational Leadership	4.2553	.86450	-1.872	3.297	1		
2.Green Moral Identity	3.3477	.54403	-1.715	4.753	0.43	1	
3.Green Psychological Climate	4.1825	.75834	-1.339	1.584	0.35	0.37	1
4. Green Creative Behavior	4.2098	.71212	-1.135	1.264	0.24	0.39	0.58

After testing and establishing the validity and reliability of the data, obtaining the descriptive and inferential statistics, and

ensuring the fit of the model, hypothesis testing was performed (see Table 4).

Table 4: Direct and Indirect Effect.

	Estimate	*p*-value	95% CI	Remarks
GTL → GPC	0.440**	0.000	[0.79, 0.103]	Supported (H1)
GPC → Green Creative Behavior	0.574**	0.000	[0.207, 0.941]	Supported (H2)
GTL → Green Creative Behavior	0.140*	0.000	[0.100, 0.181]	
GTL → GPC → GCB	0.253**	0.000	[0.176, 0.319]	Supported (H3)
GTL*GMI → GPC	0.569**	0.000	[0.381, 0.757]	Supported (H4)

Notes: * $p < 0.05$, ** $p < 0.01$, GTL = Green Transformational Leadership, GPC = Green psychological Climate, GCB = Green Creative Behavior, GMI = Green moral Identity

Table 4 indicates a summary of direct effects of all variables used in this research study. It was found that green transformational leadership has a statistically significant and positive effect on green psychological climate of 0.440** (95% CI [0.79, 0.103]. Thus, Hypothesis 1 is supported. We also noticed that there is a positive but statistically significant impact of green psychological climate on green creative behavior of 0.574** (95% CI (0.207, 0.941). Thus, Hypothesis 2 is supported. Further, Table 4 reports the indirect effect of green transformational leadership on green creative behavior by mediation of green psychological climate. Hence, partial mediation was noted, and the relationship was found to be positive and statistically significant at 0.253* (95% CI [0.176, 0.319]). As reported in Table 4, the direct impact of Green transformational leadership on green creative behavior was 0.140* (95% CI [0.100, 0.181]). Accordingly, the total effect of GTL on GCB is 0.393 (0.253+0.140), and the portion of mediation is 64.37% (0.253 /0.393). Thus, we established partial mediation, and Hypothesis 3 is supported. Lastly, this research investigated that the green moral identity moderates

the relationship between the green transformational leadership and green psychological climate. We also noted that green moral identity significantly strengthened the effect of green transformational leadership on green psychological climate 0.569** (95% CI [0.381, 0.757]. Thus, it is established that the relationship is strengthened when green moral identity is high than when it is low. Therefore, Hypothesis 4 is accepted as well.

Discussion

In today's business environment, integrating sustainable practices goes beyond being just a trend and forms a vital part of corporate strategy. Green creative actions, characterized as the generation and implementation of innovative concepts that promote environmental sustainability, are essential to achieving this goal. This type of behavior fosters a culture of creativity and also greatly enhances the overall health of the planet. A key benefit of environmentally friendly creative actions is the improvement of a company's reputation. Businesses that prioritize environmentally friendly practices are usually viewed more positively by customers, investors, and

stakeholders. This optimistic view can foster enhanced brand loyalty, customer contentment, and, in the end, greater profitability. Firstly, this research study investigated that there is a positive relationship between the green transformational leadership and green psychological climate. The result of this research is match with the existing literature for example research investigated that there is positive relationship between the green transformational and green psychological climate (Maitlo et al., 2022). The result of this study is statistically significant. Secondly, this research examined that there is a positive relationship between the green psychological climate and green creative behaviors. the finding of this study is aligned with available literature for instance there is positive relationship between the green psychological climate and green creative behaviors (Li et al., 2023). This research showed the statistical and positive result. Thirdly, this research analyzed the relationship between the green transformational leadership and green creative behaviors is mediated by green psychological climate. the outcome of this research is conformed with the literature for illustration research documented that the relationship between the green transformational leadership and green creative behaviors is mediated by green psychological climate (Al-Ghazali et al., 2022). Fourthly, this research study inquired the relationship between the green transformational leadership and green psychological climate is moderated by green moral identity such that the relationship is strengthened when the green moral identity is high than when it is low". The conclusion of this research is similar with the previous literature for example the research concluded that relationship between the green transformational leadership and green psychological climate is moderated by green creative behaviors (Al-Ghazali et al., 2022).

Green transformational leadership (GTL) greatly improves organizational sustainability by cultivating a green psychological climate (GPC), which subsequently encourages green creative behavior (GCB). This connection is especially strong when workers have a high green moral identity (GMI). Consequently, organizations ought to focus on advancing GTL, promoting GPC, and aligning sustainability efforts with employees' GMI to boost innovation, strengthen reputation, and elevate overall environmental performance. Longitudinal research and cross-cultural analyses ought to be carried out to investigate the interactions of green transformational leadership (GTL), green psychological climate (GPC), and green creative behavior (GCB) over time and within various cultural settings. Industry-specific analyses and the assessment of organizational size effects are essential for creating customized strategies that tackle distinct challenges and opportunities across different sectors. Combining GTL with various leadership styles while prioritizing diversity and inclusion can strengthen green initiatives. The impact of technological innovations, economic factors, and policy effects needs thorough investigation to encourage sustainable practices. Moreover, the creation and execution of efficient training initiatives are crucial for promoting GTL, GPC, and GCB in organizations. The research model elucidates the critical function of green transformational leadership (GTL) in fostering green creative behavior (GCB) within organizations through the establishment of a green psychological climate (GPC). This relationship is notably augmented by elevated levels of green moral identity (GMI) among employees. The empirical findings underscore the imperative for organizations to cultivate GTL, nurture a supportive GPC, and synchronize sustainability initiatives with employees' GMI. Such strategies enable companies to amplify innovation, enhance their reputational capital, and optimize overall environmental performance. This holistic approach not only augments organizational success but also advances broader environmental sustainability objectives.

CRediT Authorship Contribution Statement

Zakaullaha: Conceptualization, Data curation, Formal analysis, Funding acquisition. Syed Ahsan Raza: Investigation, Methodology, Project Administration, Maria Saleem: Resources, Software. Atta Muhammad: Supervision, Validation, Visualization. Writing – original draft. Muhammad Bilal and Faisal Mahmood: Writing – review & editing.

Declaration of Competing Interest

The authors declare no relevant financial or non-financial interests to disclose.

Ethical Statement

This study complied with ethical standards, and ethical approval was not required since no human tissue or biological samples were involved.

Data Availability Statement

The datasets produced and analyzed in this study are available from the corresponding author upon reasonable request.

Artificial Intelligence/ Language Module Statement

The authors affirm that no artificial intelligence or large language models (LLMs) were utilized in the writing, analysis, or editing of this research, and they take full responsibility for its content.

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